EVERY SATURDAY:

A Journal of Choice Reading,

SELECTED FROM FOREIGN CURRENT LITERATURE.

VOL. I.] SATURDAY, APRIL 14, 1866. [No. 15.

MIGHT AND MAGNITUDE.

M. DU CHAILLU has announced his discovery of a whole nation of negro dwarfs. He has given us measurements of their stature, male and female. It is a pity he did not measure their strength. For want of a better dynamometer, he might have pitted a man against a camel, or a woman against a cow. Should his notes contain no information on this point, he will have to return to Africa to seek it.

For, little by little the belief is gaining ground that fat is not force, nor size strength, nor plethora power. If we are to trust the most modern deductions of science, Goliath ought to have been a monster of weakness, while Samson, whose feats proclaim his prowess, can hardly have reached the middle height. Hercules, too, must have been quite a small man. "Long and lazy, little and loud," are proverbial expressions physically accounted for. The Pygmæi of Thrace, who went to war with the cranes, were indeed a valiant race, if only three inches high.

To show how things may be so, and that strength and smallness are compatible, we will begin, not quite at the beginning of all, but with a few elementary considerations suggested by the perusal of M. Henri de Parville's scientific romance, "Un Habitant de la Planète Mars," to which learned *jeu d'esprit* we do no more than allude on the present occasion.

The bodily frame of any animal is as much a machine as a steam-engine is a machine. Now the more carbon a machine consumes, the more force it is capable of producing.

We must be careful to avoid forgetting that, in strict fact, at the present epoch, not a single thing in nature is either created or annihilated. It is transformed, and that is all. Thus, you may *burn* a piece of paper; but you do not *destroy* it. You simply make it suffer a metamorphosis. If such be your desire you can find it again, and collect its substance, weight for weight. Instead of retaining its primitive shape, the greater portion has passed into a gaseous state. It has become partly gas, which mingles with the atmosphere, and partly ashes, which fall to the ground.

Force, M. de Parville elsewhere reminds us, undergoes similar transformations. *We* do not generate our own strength, as we are apt, in our pride, to fancy we do. We receive it ready generated, and then we transform it or displace it. Charcoal, for instance, in obedience to our will, supplies us with heat, that is, with force. Do you think that it really creates that force? Indeed it does not. It derives it from the sun. And when, in the depth of winter, a bright sea-coal fire is blazing in the grate, all the light and heat it gives is bestowed at the expense of the solar heat.

In truth, every vegetable substance has been actually built up, bit by bit, organ by organ, by rays of light and heat from the sun. The materials so grouped remain together; but only on one condition, namely, that the solar force, which originally assembled them, shall not quit them.

To keep convicts in prison, you must have jailers and turnkeys, who will find quite enough work to occupy their leisure. But by setting your prisoners free, the staff of men, whose services are no longer required, can be employed upon some other task or duty. Exactly so in the present case. By burning the vegetable, you destroy the quiescent state of its particles; you disturb their equilibrium; you give them the opportunity of breaking loose. The force which held them together in subjection is discharged from its functions, and employs its activity in other ways. For you, it becomes sensible as heat, and is ready as such to undertake some different employment.

Coal is a mass of vegetable matter, which has been buried in the earth for a considerable lapse of time. It is solar light and heat put into a savings-bank ages upon ages ago. It is power and action from the sun, imprisoned in the bowels of the earth. To us nineteenth centurians falls the lucky task of making it our slave, by setting it at liberty from its primeval trammels. Throw a piece of coal or wood into the fire; it is absolutely as if you took a small quantity of sun-heat in your hand, to manipulate it according to your requirements. And this is not a mere form of speech; it is a correct expression of the real fact.

When an animal exerts his strength, do you also believe that *he* creates that strength? Not more than the coal creates the steam-engine's strength. Here again it is entirely derived from the sun. The animal eats. *What* does he consume to keep himself alive? Alimentary substances, composed, in few words, of carbon, oxygen, azote, and hydrogen.

In an animal organism, those elements undergo a veritable transformation. Outside the animal, before they were eaten, they were combined, aggregated, united together, and in that state constituted food. Inside the animal, they are disunited, decomposed; the force which held them together quits them, allows them to separate, and so is free to do other work. It causes the creature's body to grow; endows it with vital and muscular force; and, in short, produces all the phenomena of life.

Who created the aliment? The Sun, — himself created by the Great Maker of all things. Here again, therefore, the life and strength possessed by an animal are actually engendered by the sun.

Throughout your whole existence you will find, by following up the same reasoning, that your most trifling act, your most thoughtless movement, has derived its origin from the sun. A blow with the fist, a breath, a sigh, can be exactly estimated in rays of sushine. Whether you trifle or whether you work, to make such an effort you have been obliged to expend so much strength; and that strength had already been stored in you by the sun, through the agency of a series of transformations. Your clothing is all borrowed from the sun. It is he who has spun every thread of your linen, and fed every fibre of your cloth and flannel. He either bleaches it snowy white, or dyes it purple and scarlet with indigo and madder. He furnishes leather for useful service, and furs and feathers for finery and parade. He gives you your bedding; whether you repose luxuriously between eider-down and wool, or stretch your weary limbs on straw, chaff, Indian corn-husks, seaweed, or even on a naked plank, as is the lot of not a few, it is the sun who gives both the one and the other. And what do we receive from regions where the sun, as it were, is not, — from the immediate neighborhood of either pole? We receive just nothing. We cannot even get to them. The absence of the sun bars our progress with an impenetrable zone of ice and snow.

In like manner, your fine cellars of hock, burgundy, and claret are nothing but bottled sunshine from the banks of the Rhine, the slopes of the Côte d'Or, and the pebbly plain of the Medoc. Your butter and cheese are merely solid forms of sunshine absorbed by the pastures of Holland or Cambridgeshire. Your sugar is crystallized sunshine from Jamaica. Your tea, quinine, coffee, and spice are embodiments of solar influences shed on the surfaces of China, Peru, and the Indian Archipelago. It is the sun's action which sends you to sleep in opium, poisons you in strychnine, and cures in decoctions of tonic herbs. You taste the sun in your sauces, eat him in your meats, and drink him even in your simplest beverage, — water. Without the sun, no blood could flow in your veins; your whole corporeal vitality, your very bodily life, is the result of the overflowings of his bounty.

Nor is this all we owe to our great central luminary. The physical forces with which we are acquainted — heat, light, electricity, magnetism, chemical affinity, and motion, — dancing their magic round, and alternately assuming each other's form and action, and now believed in all probability to be one in their common birth and origin — are direct emanations from the sun.

But how grand and beautiful is the theory that *all* material blessings here below come to us entirely and alone from the sun! Its simplicity and unity are completely consistent with the attributes of one Supreme Omnipotent Being, the Maker of the universe. Given motion, and given matter, all the rest follows as an inevitable consequence. All nature, from the simplest fact to the most complex phenomenon, is nothing but a work of destruction or reconstruction, a displacement of force from one point to another, according to laws which are absolutely general. Nor is there materialism lurking in the thought; for it is impossible to forget that, if motion and matter form and transform organic beings, there still needed a Creator to give the impulse and the law. And, as to minor details, the Hand of God is visible throughout the universe.

The sun, then, is God's material instrument on earth, as throughout the solar system. He is the dispenser to us of our share of the advantages allotted to us by the Great Benefactor. Of all forms of worship, sun-worship is the most excusable in nations unenlightened by Revelation. Bending the knee to the god of day, in the belief that the throne of the Almighty is seated in the sun, is a far more elevated phase of mistaken adoration than prostrating one's self before an ugly image carved out of the stump of a tree.

With this much said about might, let us now look at the question of magnitude. From the foregoing statements, it may easily be conceived that the more an organized being is capable, in consequence of its physiological structure, of assimilating a given amount of aliment, the more effective force it will set at liberty, or, in other words, the more strength it will have at its own disposal.

Now, the solar forces, thus rendered active within the frame of a living creature, have, by determining its growth, to construct the animal itself. They have to generate its own proper vitality, as well as the result of vitality, its muscular power. It may therefore be asserted that the effective force at the disposal of every living creature will increase in proportion to its alimentation, and will diminish in proportion to its weight. Otherwise expressing the same idea: The more food an animal consumes and the less it weighs, the more muscular strength it will possess.

These deductions have lately been confirmed by curious experiments instituted by M. Felix Plateau, who has determined the value of the relative muscular power of insects, — power of pushing, power of drawing, and the weight which the creature is able to fly away with.

It had already been remarked that animals of small stature are by no means proportionally the weakest. Pliny, in his Natural History, asserts that, in strength, the ant is superior to all other creatures. The length and height of the flea's leap also appear quite out of proportion to its weight. No very definite conclusion, however, had hitherto been arrived at. M. Plateau has settled the question by employing exact science as the test. Insects belonging to different species, placed on a plane surface, have been made to draw gradually increasing weights.

A man of thirty, weighing on an average a hundred and thirty pounds, can drag, according to Regnier, only a hundred and twenty pounds. The proportion of the weight drawn to the weight of his body is no more than as twelve to thirteen. A draught-horse can exert, only for a few instants, an effort equal to about two-thirds of his own proper weight. The man, therefore, is stronger than the horse.

But, according to M. Plateau, the smallest insect drags without difficulty five, six, ten, twenty times its own weight, and more. The cockchafer draws fourteen times its own weight. Other coleoptera are able to put themselves into equilibrium with a force of traction reaching as high as forty-two times their own weight. Insects, therefore, when compared with the vertebrata which we employ as beasts of draught, have enormous muscular power. If a horse had the same relative strength as a donacia, the traction it could exercise would be equivalent to some sixty thousand pounds.

M. Plateau has also adduced evidence of the fact that, in the same group of insects, if you compare two insects notably differing in weight, the smaller and lighter will manifest the greater strength.

To ascertain its pushing power, M. Plateau introduced the insect into a card-paper tube whose inner surface had been slightly roughened. The creature, perceiving the light at the end through a transparent plate which barred its passage, advanced by pushing the latter forward with all its might and main, especially if excited a little. The plate, pushed forward, acted on a lever connected with an apparatus for measuring the effort made. In this case also it turned out that the comparative power of pushing, like that of traction, is greater in proportion as the size and weight of the insect are small. Experiments to determine the weight which a flying insect can carry were performed by means of a thread with a ball of putty at the end, whose mass could be augmented or reduced at will. The result is that, during flight, an insect cannot carry a weight sensibly greater than that of its own body.

Consequently, man, less heavy than the horse, has a greater relative muscular power. The dog, less heavy than man, drags a comparatively heavier burden. Insects, as their weight grows less and less, are able to drag more and more. It would appear, therefore, that the muscular force of living creatures is in inverse proportion to their mass.

But we must not forget that it ought to be in direct proportion to the quantity of carbon burnt in their system. To put the law completely out of doubt, it would be necessary to determine the exact weight of the food consumed, and the quantity of carbonic acid disengaged in the act of breathing. Some chemist will settle it for us one of these days.

A PRIVATE INQUIRY.

One evening, some months ago, I was seated before the fire waiting for my wife, whom I had promised to take to the theatre, when the servant brought in a card, saying that a gentleman particularly desired to see me. I looked at the card; it bore the name of "Chr. Waitzen," with an address, and in the corner, "Private Inquiry Office." The name was known to me merely from my having remarked it at the foot of mysterious advertisements; of the bearer of it I knew no more than the card told me.

"Did he say what he wanted, Jane? I 'm just going out."

"No, sir; but he wish to see you most particular. Missus won't be ready for a quarter of an hour," she added.

"Show him in," I said. "What the deuce can he want with me?" I muttered to myself, as I looked at the clock.

The servant returned in a few moments, ushering in a tall man, to whom I offered a seat. Mr. Waitzen, who, I afterwards learned, had formerly been in "the force," had still about him marks of the policeman, in spite of his evident attempts to repress them. I have observed about detectives that they never appear quite at home in their clothes; I suppose that, from constantly assuming all kinds of garments as disguises, they never become thoroughly used to one style of dress. From this cause, or from some other with which I am not acquainted, it results that a detective's dress never has the individuality which in some degree, however faint, marks that of the rest of men. Chr. Waitzen had deserted "the force" for some years, but his old trade was discernible at times. The official boots, to which, in spite of the fact that they at once betray any disguise, the ordinary detective clings as a drowning man to a hencoop, — these this gentleman had forever discarded.

"Mr. Waitzen?"

"That is my name, sir."

"To what — to what fortunate occurrence, sir, am I indebted for this visit?" I asked, with a slight irony in my manner; for, to tell the truth, I did not feel very well disposed towards the race of "Private Inquirers." "May I ask whether I am the object of some delicate inquiry?"

"Not at all, sir. I have come to beg your assistance in a matter of business: may I reckon on your aid?"

"That depends entirely on what you require. I must know first what is the assistance you desire, and for what purpose."

"Of course, I should not for one moment think of asking you for any aid without giving you every assurance you could require that the information is sought for a proper purpose." He took a little notebook from his pocket. "You are skilful in reading ciphers?" he asked.

"Well," I said, "I've amused myself sometimes in that way; but how did you know it?"

"Excuse me; it is my business to know everything by myself or through others. You sent to the *Times* last autumn a solution of an advertisement in cipher?"

"I did; but —"

"I made a note of the initials (you did not sign your name) and of the address: I thought it might be useful some day. Your letter was dated from C——, a small watering-place in Dunshire. I intended, when I might be that way, to see whether you lived there (highly improbable), or if not, to get your address. I had no difficulty in finding the house at which you had lodged; but they had forgotten your place of abode in London. Very awkward! But you had had a check sent down to you, and that check you changed. The bank had not kept the name of the drawer, but the check was drawn on Coutts's. I found the name of the drawer —"

"My aunt," I interposed.

"*Exactly*," continued Waitzen: "got your address, and here I am."

"Well," I said, "this is a nice specimen of the way in which you look into people's private affairs!"

"What could I do, sir? If you had signed your name, I should have been saved a journey. And now, sir, before asking your assistance, you, a gentleman of honorable and delicate feeling, will, of course, insist on knowing the object for which that assistance is required. You 're quite right, sir; this system of private inquiries is very low and dirty, but what can I do? It 's my trade. Will you aid me, if I convince you that all is straightforward?"

"Let me hear," I said.

He again looked at his note-book. "Last settling-day on the Stock Exchange, J. C. disappeared, carrying with him, fraudulently, an immense number of bonds and other securities, which he can easily negotiate on any Bourse. The police are after him; but several members of the Stock Exchange, acting in concert, have, in addition, authorized me to make inquiry. I have reason to believe that he is in England, and I also believe, from the active pursuit set on foot immediately, and from

other circumstances, that it is not likely he can have got off with all the securities in his actual possession. I have also reason to believe — I need not explain why, but partly from the word at the head, — that this advertisement in cipher is either from him, or addressed to him. Now, sir, that I have told you my story, will you undertake to help me?" Here he handed to me an advertisement, cut from a newspaper. It ran thus: —

FRED. (112·18) (236·49) (207·76) (132·3) (27·61) (142·54) (121·32) (12·32) (72·6) (202·30) (38·106) (262·51) (78·22) (63·94) (110·6) (262·51) (19·33) (160·60) (230·92) (37·51) (210·29) (204·79) (15·67) (143·61) (121·32) (236·54) (37·101) (21·17) (236·54) (238·78) (5·1) (175·75) (143·61) (13·7) (204·79) (114·2) (10·102) (121·32) (132·15) (78·112) (157·62) (100·58) (134·19) (264·30) (268·66) (5.1) (187·71) (80·45) (117·75) (265·62) (9·101) (245·62) (154·55) (158·46) (256·41).

"Well," I said, after looking at it for a few moments, "this cipher does not seem to be of the simplest kind! Before undertaking the task, I should like to know the terms." He mentioned them, and I am bound to say that they were very liberal. "But, after all," I said, "this may not be J. C.'s advertisement. Yet I shall have the trouble all the same!"

"And the check also, my dear sir," said Waitzen with fervor.

"Very good; on those terms I undertake it. If I cannot succeed in reading the cipher, I agree to lose my pains."

"One thing more," said the private inquirer; "you see the importance of my knowing the meaning of this advertisement as early as possible; when can you let me have the translation?"

"I'll do all I can," I replied; "will you look in at noon to-morrow? I shall have it for you by then, most likely, if I can decipher it at all."

At this moment the door opened, and my wife entered, dressed for the theatre. Waitzen bowed to her, and then glancing with evident anxiety at my dress-coat, whispered: "You will surely begin at once? You are not going out? Only think of the little time you will have!"

"I really must go," I said. "I shall leave the theatre after the first piece, and shall have plenty of time; besides, I shall look over it at the theatre."

He implored me to remain at home, and to begin work at once; but I was quite deaf to his entreaties, and, taking my wife's arm in mine, went down stairs. At the theatre, I remarked, some half-hour after our arrival, a face which seemed always turned towards us, except that, when I looked in its direction, it became averted. After noticing this for two or three times, I discovered that the face was the face of Chr. Waitzen, who had come to the theatre in disguise, to see, apparently, whether I carried out my promise of looking over the cipher in my box. To punish him for his distrust, I kept my eyes on the performance the whole time.

On our return home, I bade my wife good-night, explaining that I was going to sit up to work. It 's all very well to preach "early to bed and early to rise"; but if you have any head-work to do, there 's no time like that between 11 P. M. and 2 A. M., when all your household is asleep. Everything is quiet; even the street-noises, unless you live in a populous and late quarter, are hushed, and, above all, you are safe from interruption. As you sit in the genial warmth of a fire, with the light of your lamp concentrated on your papers or books, you hear, perhaps, now and then, a passing cab coming home from the theatre, or, later, the cry of some roisterer, singing the vulgar music-hall melody that he heard an hour ago, when a little less drunk than now; you catch the tread of the solitary policeman, and notice that he tries your door as he passes; but all these sounds are momentary, and do but serve to intensify the quiet. Mind and body are nicely balanced; body has had its proper allowance of exercise, but not yet tired, consents to let mind be at peace. But the morning! At what hour can you rise when you will not be disturbed by noises? You are hungry; ten months out of the twelve you are cold, for you are without fire; and the other months it is so fine, that body wants to be abroad in the bright, smokeless day. No! if you want to do work, sit up late.

It was what, at all events, I made up my mind to do, so, after stirring the fire, I sat down to look at the mysterious scrap of paper left me by Waitzen. My first step was to get some inkling of the nature of the cipher, of the plan on which it proceeded. Exclusive of the word at the head, I found that the specimen I had consisted of 252 figures, divided by brackets into 55 groups, a dot, in every case, again separating the figures within each bracket into two parts. The number of figures enclosed in each bracket varied from 2 up to 5; the proportions in which the various combinations were found differing widely, there being only two instances of groups of 2 figures each; 2, of 3 each; 13, of 4 each; and 38, or more than three fifths of the whole number, of 5 each. Now, the object of these brackets and dots might quite possibly be merely to increase the difficulty of reading the cipher; it was, however, equally possible that they were there to serve their ostensible purpose, the division and subdivision of the figures. Carefully guarding against absolutely assuming the correctness of this latter view, I sought in the cipher itself for something to lead me to its adoption or rejection. I found that the characters used were the numerals from 0 to 9. I looked at this "0" a little more closely, and found that it occurred 19 times. Now, had the division and subdivision of the figures been arbitrary merely, it would require no proof to show that it should have occurred once, at the very least, at the beginning of a group. It did not so occur. The first step was gained; the division was a necessary part of the cipher.

The fact I had remarked led me on another step. Had the plan of the cipher been to represent certain letters by certain figures, I should have been entitled to expect the "0" at the head of a group; since, in English, the language in which the cipher was probably written, there is no letter of frequent occurrence which is not also an initial letter, a rule which holds good in all the European languages with which I am acquainted.

I should have been already almost justified in concluding that the meaning of the cipher depended on the grouping, but I found other proofs, which at the same time led me still further on. I have already remarked the frequency of groups of 5 figures. Now, this singular predominance of groups of 5 figures would scarcely harmonize with any plan which represented letters by single arbitrary signs, although it would no doubt be possible to compose sentences consisting chiefly of words of 5 letters, retaining or rejecting the vowels. But in the great majority of cases of 5 figures, I found 3 figures before the dot. To these figures before the dots,

I, for the moment, restricted my attention. I found that (taking all the groups) they ranged, with intervals, from 5 to 268; in 37 cases out of the 55, there were three figures. Discarding repetitions, I found that under 100 there were 15; between 100 and 200, 15; and from 200 to the end, 13; a degree of uniformity higher than I had expected to find, and high enough to establish that it was the result of the grouping being dependent on a plan.

I had thus determined that the divisions were not arbitrary, and that the characters used did not singly represent letters; by inference, therefore, as they must be held to mean something, that in groups they represented letters or words.

I now went over the groups of figures after the dots, and found that they ranged from 1 to 112. Dividing the numbers between these points equally at 56, I found, discarding repetitions, that up to that number there were 27; above it, 22. With the light I had now got, all converging on one point, I should, in a long specimen, have expected a far more exact proportion; it was one of my difficulties that I had to deal with so short a piece of writing. The proportion, however, was, as in the former case, sufficient to prove the existence of a system. The numbers stopped short at 112, whereas, in the other groups, they went as high as 268; the two systems, regulating the groups before and after the dots, were therefore different. It did not absolutely follow that they depended one on the other, but the bracketing rendered it highly probable that they did. I considered myself justified in assuming that each bracketed group represented a letter or a word.

So far, the conclusions at which I had arrived had been almost forced on me. There was now, however, less certainty in my progress. My examination of the cipher had, nevertheless, shown me in what direction the probabilities lay. They pointed to a conclusion which might well have made Chr. Waitzen tremble for the success of my attempt. The first instinctive notion I had formed of the cipher had been confirmed by all I had arrived at; it was, that the numbers referred to a book, — the first group of figures in each bracket indicating a page, and the second, a word or line in that page.

Now, when Poe, in his remarkable story of *The Gold Beetle*, tells us "that it may well be doubted whether human ingenuity can construct an enigma of the kind" (he is speaking of cryptograms), "which human ingenuity may not, by proper application, resolve," — a proposition safe in its vagueness, — he must be held to speak only of ciphers which proceed on a plan the very method of which affords a guide to its solution. Taking the cipher in his tale, for example, each letter being represented by a distinct sign, the frequency of recurrence of particular signs leads to their identification with certain letters. His remarks can hardly apply to cases where, the signs used being purely arbitrary, their solution requires a knowledge of the prearranged plan. In the cipher, the meaning of which I was attempting to discover, I had reason to believe that the signs represented, in an arbitrary manner, letters or words. If this view was correct, the cipher did not contain within itself the means by which it might be read; I could only be successful by discovering the very book used in its construction, and the mode of using that book. The task, at first sight, appeared hopeless; but, upon consideration, I saw enough to induce me to proceed.

I remarked several repetitions. Now, in a cipher constructed with the ingenuity of which this gave evidence, it would have been very easy, had each sign, by the indication of a page in a book, and a line or word in that page, represented a *letter only*, to pick out dozens, or even hundreds of each letter, so as to avoid a recurrence of signs which might afford a solution to the enigma. The repetitions, on the other hand, were too few to allow of the possibility of each sign representing a distinct letter. The recurrence, but not too frequent recurrence, of signs led me to believe that each group of figures within a bracket represented *a word*. I had arrived at the conclusion, that the number before the dot gave the page; I was convinced that the number after the dot represented a line in each page. The highest of these numbers was 112; now, it must be a very empty page indeed which does not contain many times 112 words. The second number could, then, hardly refer to the sequence of words; it could only represent the line.

Now, what book would one take by preference for the construction of a cipher of this character? In any ordinary book, there would be extreme difficulty in finding the particular word required, amounting, in many cases, to impossibility; there is only one class of book which will furnish immediately, without labor, every word wanted, — a dictionary. If a dictionary were used, there would be no necessity to indicate more than the line in which the word, in its alphabetical order, was found; with other books, three numbers would be required, — for the page, the line, and the word, respectively. This confirmed my supposition. By a fresh examination of the cipher, I might test this view, and I therefore arranged in a table, like the following, the numbers before the dots, indicating by a mark, for a reason which the reader will see presently, the place of the absent numbers.

.	.	.	.	110	.	.	.	.	245
.	.	.	.	.	.	.	.	.	.
(2) 5	.	.	.	.	.	.	.	.	.
.	.	.	.	114	.	.	.	.	.
.	.	.	.	.	142	.	.	.	.
.	.	.	.	.	(2) 143	.	.	.	.
9	.	63	.	117	.	.	.	.	.
10 (2) 37		.	.	.	.	.	.	.	.
12	38	.	.	.	.	.	.	.	.
13	.	.	.	.	.	.	.	.	.
.	.	.	.	(3) 121	.	175	202	.	256
15	.	.	.	.	.	.	.	230	.
.	.	.	.	.	.	.	(2) 204	.	.
.	.	.	.	.	.	.	.	.	.
19	.	72	.	.	.	.	207	.	.
21	.	.	100	.	154	.	.	.	(2) 262
.	.	.	.	.	.	.	210	(2) 236	.
.	.	.	.	.	157	.	.	238	264
.	.	.	.	.	158	.	.	.	265
.	(2) 78	.	(2) 132	.	.	.	.	.	.
.	.	.	.	.	160	187	.	.	268
27	.	80	.	134	.	.	.	.	.

I had still something to do before I could apply my test, which was the frequency of occurrence of initial letters. The frequency of initial letters, as they occur in a dictionary, that is, without repetitions, is as follows: S, C, P, D, A, R, B, T, M, I, F, E, U, H, L, G, W, O, V, N, J, Q, K, Y, X, Z. But the reader will at once see that the recurrence of words of frequent and inevitable use may entirely upset this order. This is what does in fact happen. For my purpose, I had to ascertain the frequency of occurrence of initial letters as they are found in ordinary writing, or more properly for my purpose, in conversation. To arrive at this, I took up a num-

ber of "Chambers" that was lying on the table, and made an analysis of a few pages of a tale written in the first person. I found that the order of initial letters was this: T, A, I, W, H, O, M, S, B, F, D, C, N, P, L, G, E, R, U, J, K, Y, V, Q, X, Z. The letter *T* predominates largely over all the others, owing to the frequent use of such words as *the, that, this, then, there, their, them, they, these, those, to.* Next comes *A*, owing to the frequency of the words *a, an, and, am, are, at, all,* &c.; then *I*, under which letters we have *I, is, it, its, in, into;* and next *W*, including many such words as *we, where, when, was, were, who, which, what, whose, with, would, will,* &c. In any moderately long specimen of "conversational" writing, these four letters, as initials, will largely predominate over all others. Now, of these four letters, *A* is at the head of the alphabetical order, *I* at about the middle, and *W* at the end, except by a few pages, in large dictionaries. I now proceeded to apply my test, and found that the numbers lay in a cluster towards the beginning and end. Those quite at the end, I was justified in assuming represented words beginning with *W*. Taking the last number, 268, as giving, probably, almost the last page in the key, I found that in a dictionary of about that length the letter *I* should begin at about page 120, or a few pages before, since the small dictionaries omit numbers of words with the prefixes *in, un,* and *re*, which go to swell the latter part of large dictionaries, such as that I was using as a guide. On referring to my table, I found that there was no great indication of clustering towards the middle; but the specimen on which I was operating being so very short, I could scarcely expect to find all the points in my favor. Had I had several pages to deal with, I could have indicated pretty correctly the limits of all the important letters.

The key required to read the cipher was, then, a pocket dictionary of about 268 or 270 pages. It was very late when I arrived at this result; but before going to bed, I just looked at another point which I had remarked. I found two groups of figures identical as regards the numbers before the dots, but varying in those after; they were (236·49) and (236·54). By calculating the proportion to be given to each letter in a dictionary of 268 pages, I found that the two words indicated by these numbers should begin with *th*. There was an interval of *five* words between them. The compilers of small dictionaries proceed with so little method, that this interval did not guide me to the positive identification of these two words, but assuming that they were of common occurrence, I thought I could determine that they must form one of five pairs — *that, the; the, their; their, them; them, then; these, they.*

I had now done all that I could for the present, and went to bed with fair hopes of being able to find the dictionary used as a key, for I reflected that *two* copies must have been required, — one to compose, the other to decipher, the cryptogram. It would probably, then, be a dictionary in ordinary use, so ordinary that *two* copies of it could be purchased at the same time, probably at the same shop.

In the morning, therefore, I took a cab to Paternoster Row, where, as the reader probably knows, there are wholesale booksellers at whose warehouses small shopkeepers can supply themselves without the trouble of sending to different publishers in quest of works. At one of these warehouses I was known, and was allowed to make an inspection of all the pocket-dictionaries in stock. I selected about half a score, that seemed more or less likely to meet my requirements, and then hurried home, having foolishly left my cipher behind me. On reaching home, I carefully tried my dictionaries one by one, in every way suggested by what I had already learned of the nature of the cipher. I at last found one, which, by taking the first number for the page, and the second for the word, not counting lines, but only words in their alphabetical order, gave sense. The title-page informed me that it was Webster's Dictionary, the "one hundredth thousand," and was published at 158 Fleet Street. With very little trouble, I made out the following: —

FRED. I hear that search is being made in all direction s canal was drag d H was arrest on suspicion but servant saw another man in the cab at the time a policeman also saw him afterwards in it cab man not found stay where you a r e I will advertise twentieth N o v

I need only say in explanation, that where a word, like "are" was not in the dictionary, it was spelt by indicating the letter of the alphabet at the head of each division in the dictionary; a plan also adopted in the word "dragged," the termination being indicated by the separate "d." It was thus possible to spell any proper name or word which might not occur in the dictionary.

The contents of the cipher were so different from what Waitzen had led me to expect, that it was evident there was some mistake. Yet what could it be? He could not have given me a wrong slip, for he had called my attention to the word at the head. I had fairly earned the promised reward, but there was so clearly a mistake somewhere, that I was anxious to ferret out the mystery. Waitzen had given me the date of the paper, and I therefore sent for a copy, which was got after some delay. Singularly enough, there was in it, just below the advertisement I had deciphered, another one, also in cipher. The second cryptogram was of the simplest description; one letter was substituted for another. In ten minutes, I had a translation of it lying before me. Here it is: —

FEDE. I don't think that I am watched; not sure. Police went down to Liverpool after you. Get as soon as you can to A., where I will join you. I got the bag all right. Steamer sails on the seventeenth.

This looked much more like Chr. Waitzen's affair. I had just deciphered it when I heard his knock at the door. I showed him my reading of the first advertisement; he looked at it in blank dismay, but when I assured him that there could be no mistake, and producing the key, showed him, greatly to his wonderment, how to use it, he took from his pocket-book a check which he filled up, and handed to me. "One moment!" I said, handing him the second: "is that what you want?" I saw by his face that it was, and he assured me that the information given, slight as it was, was quite enough for him. I explained to him how I had hit upon it. But the words at the top! Well, after all, they were not very dissimilar, in the letters that composed them, at all events; and if they had got changed by some mistake, perhaps the confusion was not altogether without precedent. Chr. Waitzen enlarged the figures on the check, and was preparing to give immediate chase, when I stopped him. "Do you know anything about the other affair?" I asked.

"Yes," he said, "and a curious affair it is; would you like to hear it?"

I nodded assent, and offered him a chair.

"Two friends, A. and the H. of the advertisement, went one day, about a month ago, to dine at a foreign restaurant at the West End, and having dined, returned home together in a cab, both living in the same neighborhood, — St. John's Wood. H. lived nearer to town than A., and to his house accordingly the cabman drove first. It was a wet night, and the cabman got down to knock at the door, telling the friends as he did so that it was raining. It was perhaps lucky for H. that things so fell out, for the servant who came to the door, and who knew A., saw him in the cab. H., after bidding A. good night, went into the house, and as he did so, saw the cab drive off with A. in it. A policeman whom the cab passed a little further on also saw a man within it. That was the last seen of A. alive or dead from that time to this."

"A curious story," I said, "what can it mean?"

"Don't know," replied Waitzen; "but A., who was very close on the subject, had passed years of his life abroad in Italy, roving about no one knew where or how. His disappearance may in some way be connected with his old continental life, and H. remembers a trifling circumstance that seems to make this probable. He observed that when at the restaurant, a foreign one, as I have said, A. suddenly started, as if he had received a shock; in answer to H.'s inquiries, he refused to explain himself, but altered his position, so as to face round. There was a change in his manner noticeable through the whole evening; and when he bade H. good night, there was an earnestness in his tone that seemed to betoken apprehension of a coming evil. H. had wished to see him home, but this he refused. I can only guess at the rest. Some act of vengeance probably, the long dread of which had always kept A. silent on his foreign life."

"But the police?" I said.

"And Foschini, — and the Waterloo Bridge business?" replied Waitzen, shrugging his shoulders.

"The Waterloo Bridge affair?" I asked.

"Yes, there was an Italian brain at the bottom of that, as surely as Italians were concerned in the case of Foschini, whose habits, residence, and person were all known to the police, but who got off in spite of them. It was well done that Bridge business," he continued, half closing his eyes, and with the tone of a critic who dilates on a masterpiece, — "Italian beyond a doubt. A few months later, and the shells of the Orsini burst in front of the Opera House. Such plans did n't bear interruption. The police are powerless before associations, where the tie is strong. Good day," he added, after a pause. "If I don't call on you, as I hope you will permit me to do at times, I think you will hear of my man in the police reports in a few days."

I did; Waitzen's "man" was arrested a few days later, at Southampton, on board a boat which was on the point of leaving for the West Indies, whence he would no doubt have made his way to America.

I never heard anything more of A. or of his mysterious disappearance, on the story of which I had so strangely stumbled. And here ends my history of A Private Inquiry.

THE EXHIBITION OF FISH.

The Emperor of the French has called on the governments of Europe to help him in teaching fishermen to fish. They are all invited to send Commissioners, next July, to Arcachon, the beautiful, soft-breezed bay which it is worth while to visit, if only to learn the pleasure man may derive from perfect climate. There they are to exhibit specimens of all manner of fish, — raw, preserved, and cured; all kinds of boats, nets, lines, dredges, and other apparatus; schemes for the speedier catching of fish, and plans for their artificial culture; and finally, all marine products, from pearls and amber and shells to whalebone and sea-weeds, from seasand to cod-liver oil. Mr. Caird, who is always turning up in some useful position or other, has been appointed Commissioner for Great Britian, and while it is certain that the collection will be a most curious one, it is possible that it may produce some valuable result. The fish themselves probably will not be entertaining. A cod has not eyes like a dog, any more than a dog has eyes like a human being, and there is a want of thought in a mackerel, a deficiency of purpose in a pilchard, a feebleness of expression about an oyster which will greatly detract from the human character of the interest felt in them. There will indeed be interest if the ichthyological aristocracy are exhibited alive, but one feels a doubt whether even Imperial energy will go that length, whether M. Fould will not shrink from the cost of an aquarium for whales, and Mr. Buckland decline to wash the nose of a shark with a sufficient assiduity of affection. The show of apparatus will, however, be important. No craft has remained more stationary than the fisherman's. If St. Peter were to visit Newhaven, he would find very few instruments in use of which he did not know the meaning, and extremely little advance, if any, in the modes of using them.

Of really original devices for catching fish there have been, for two thousand years, very few, and we do not recall one which has been absolutely successful. The most promising, the use of the electric light, which directed downwards brought the fish to the top to see if the world was afire, seems not to have been tried, except in experiments, which though reported successful were not continued, and even the boats have little improved. They have been made a little bigger, but sails and oars are still the motors, neither steam nor machinery being employed, except to quicken delivery between the receiving and the consuming ports. The occupation has indeed been left mainly to a very laborious, very conservative, and very stolid caste of laborers, who in most places live apart, and regard advice with dislike, and interference with disgust. The sea in fact is farmed on the system known on land as the *petite culture*, and though the laborers combine better than peasant proprietors can as yet be made to do, very little real intellect or scientific knowledge has been brought to bear upon the actual taking. There is indeed a literature of salmon, Act after Act having been passed for the preservation of the king of fishes, and there are now in England, Ireland, and Norway great salmon preserves, while the oyster has been the object of some attention, but the commoner fishes have been neglected, and every group of fishermen does very nearly what is right in its own unscientific eyes. It is to that mistake the world entirely owes the destruction of the pearl fishery of Ceylon, and London partly owes the present preposterous price of oysters. The Exhibition ought to bring out the dreamers, who have done so much for all other occupations, and amidst heaps of suggestive inutilities yield to fishermen at all events the best shape of boat, a propeller which can insure speed without great exertion or much

room lost in stowage, the best winch to add to the amount of hauling power, the best rope, a subject on which experiments seem to have been few, and the best net for cheapness, resistance, and durability. After all has been said and tried that can be said and tried, the fish must still be got out of the water by something with meshes, and as we already have something with meshes, invention must be limited to improvements in form and in material.

More can be done to secure the speedy transmission of the fish to market, the greatest of all the fisherman's difficulties, and *possibly*, though we have little hope, in the matter of keeping the fish alive after they are caught, which would be equivalent to greater speed in transmission. Twelve hours so gained would make all the difference, not only by reducing the average of loss from spoiled fish, but by immensely increasing the area of the fishing-grounds, enabling fishermen to go very much farther from the coast. It is, moreover, by no means certain that means may not exist of preserving fish after they are dead without pickling or curing them, and without any perceptible alteration of quality or flavor, — a great discovery, if it could be made. Antiseptics are one of the wants of the age, and chemistry has as yet done very little either for the butcher or the dealer in fish. One race has indeed met the difficulty of keeping fish good by educating its stomach to like it best when it is bad; but then the Burmese have on such points exceptional perseverance. After a few centuries of effort, originating in their dislike to take animal life, they have learnt honestly to prefer rotten fish, — really rotten, — just as English squires like game a little high, and venison when its stench turns ordinary human beings sick; their waters therefore furnish an inexhaustible supply, even to the far interior. European taste is not, however, civilized up to that point, and probably will not be, ideas about hygiene gaining great popularity, and fishermen must look for greater profits to greater speed of transmission and changes in public taste. There seems in this last department to be a failure in the programme of the Exhibition.

The greatest obstacle in the way of the fish-market is the difficulty of spreading a taste for it among the mass of the people. Catholics eat it once a week, because they otherwise affront the priests; but Protestants say, very justly, that it is not "filling," and do not recognize the truth, so thoroughly understood in Asia, that fish is not a food, but a condiment, intended by Providence not to nourish people, but to induce them to relish the very tasteless cereals which will nourish them. Hindoos eat fish day by day for years on end; but they eat it to make rice and scones more palatable, not with the idea that they can perform hard labor on fish. Bread must for ages be the staple sustenance of Europe; but if the people could be induced to appreciate fish, as, for instance, English hinds appreciate cheese, and Frenchmen cresses, and Austrians cabbage, they would gain a most valuable addition to their luxuries. The Emperor, from this point of view, has done wisely in ordering an exhibition of preserved, cured, and pickled fish, for these varieties can be made much more flavorly than plain fish; and we sincerely hope some speculator will exhibit good and new specimens of those arts. The rich, for example, enjoy sardines. There must be many fish, and much cheaper fish, which, if cured in the same way, would be excellent eating after the same fashion, i. e. as a relish, and not as food. Suppose herrings were sardinized, or mackerel? Very few fish are dried in England, fish-roe is not sold separately, — it is in India, very cheap roes being made into *compotes* as good as caviare, — pickling in oil, except for the purposes of cheating, is almost unknown, and the only form of curing very much used has the fault that it overcures.

The overcured fish, however, is universally popular, is eaten, for example, by country folk who would not accept mackerel as a gift, and would look incredulous if told that any fish of moderate size can be cured as well as herring. Potted fish, like potted meat, though it ought to be one of the least costly of luxuries, is in England prepared only for the rich, and consequently bears an artificial price of a few hundreds per cent, and the poor really obtain fish only in the shape of red herrings, sprats, and sometimes mackerel. Of these, even, they seldom cook any properly, and we hope this division of the subject will have its notice in the exhibition at Arcachon. To spread the taste for fish among the masses it is essential that it should be "nice," which means in their mouths strong-flavored, and easy to cook, the last an attribute of fish almost unknown to the poor. It may be taken as a maxim, that any fish, from sturgeon to sprats, will broil well, without any worry of appliances; that it would be nice, for example, if flung on to a wood fire, or roasted before a coal one, the former an expedient constantly adopted in America. Almost any fish will bake well, and most fishes would boil well if poor cooks were only aware that something sour — wine is best, vinegar is good, but sorrel costs nothing — should be put into the water, and that fish can be boiled too much. When, however, it is to be eaten as a condiment, broiled, roast, or baked fish is much better than boiled, and preserved fish better than either, and if the Exhibition makes one new form of preserving popular it will have repaid its cost. If it yields us a new and speedier boat, or a net that will not break, or a mode of hauling independent of human sinews, it will have conferred an important advantage upon the entire coast population of all Europe. Science has done somewhat for mankind, but the saying that it has given the poor only the lucifer match has in it an unpleasant element of truth. If it can besides give them a new diet, or an additional diet, it will have accomplished something towards the only end worthy human effort, — the diminution of the mass of human misery.

A DAY IN BAD COMPANY.

I AM a country gentleman, or, as that description of myself may perhaps be a little too ambitious or too vague, let me modify it by saying that I reside in ——shire, and have sufficient means to enable me to live without occupation. Owing probably to this circumstance, I have acquired a certain indolence of disposition, which is shown in my conversation and bearing, even in my walk. I may as well add that I am forty-eight years of age, of somewhat sturdy build, and with a ruddy complexion, due no doubt to fresh air, regular habits, and a contented mind. This ruddiness and the somewhat homely style in which I invariably dress give me a rough rural appearance, so that, in the eyes of the casual observer, I must seem to stand on a rather lower step in the social scale than I really occupy. Then, too, I am told by my friends, that the expression of my face is dull, some say even stupid. Upon this

point I, of course, offer no opinion. I will merely say that the very people who thus describe me are quite agreed in admitting that I am not such a fool as I look.

When I am in town I am very fond of looking into the shop windows. It is an odd sort of taste, perhaps, for a full-grown man, who has been half over the world; but we all have our peculiarities, and that is one of mine. The old knight, Sir Thomas, in the "Ingoldsby Legends,"

> "Would pore by the hour
> O'er a weed, or a flower,
> Or the slugs that came crawling out after a shower";

and, in like manner, do I pore over the articles displayed in the shop windows at the West End. I am never tired of it, in fact. This is a rather long exordium; but appears to me necessary to put the reader in possession of these facts as a preparation for what is to follow. And now to my story.

One day, in the height of the London season, I was sauntering through Regent Street, indulging in my favorite occupation, when a gentleman just before me accidentally dropped his umbrella, and it fell within an inch of my toes. I have said he was a gentleman; but I ought perhaps to have said he was a decently dressed man, apparently from the country, very quiet and harmless-looking, not vulgar, but certainly not refined. In a word, he appeared about as much of a gentleman as myself, but not more.

"I really beg your pardon, sir," he said, as he turned quickly round and picked up the umbrella. "It was very careless of me. I hope you 're not hurt?"

"Well," I replied, "as the umbrella did n't touch me I don't see how I well can be."

"I 'm sure I 'm very sorry," he continued, apologetically.

"Don't name it, don't name it," said I. "There 's not the slightest harm done, and no need to apologize. Such little accidents will happen every day."

"Ah," he remarked, "you may well say that, sir, especially in London streets."

"Yes, they are tolerably crowded at this time of day, or any time, for that matter."

"And especially for a stranger to London," he added.

"O, you are a stranger to London, are you?" I remarked, and almost involuntarily cast a somewhat searching glance at him.

"Quite a stranger," he replied, with perfect simplicity of manner, and without appearing to notice my scrutinizing look. "I 've only been here a few days, and, to say the truth, I sha'n't be sorry when I get back again into Norfolk." (He had something of the Norfolk manner.) "It 's so very lonely not to know any one in a great place like this."

"It must be," I carelessly remarked, for I wanted to shake the fellow off.

At this point in our conversation we had arrived at a street corner, and I stopped, as a hint for my companion to go on. I hoped that, as he had no further excuse for talking to me, he would hasten his pace and leave me to saunter as before. But no. Evidently he was so glad to find some one to speak to that he was unwilling to part company so soon. He still kept by my side, therefore, and after some more conversation of the same character as the above, asked me if I had any objection to take a glass of ale with him. I had no need of a glass of ale just then, and felt no desire to have one with a perfect stranger; still the offer seemed well meant. I accordingly accepted it, and we entered the first tavern we found handy.

I wanted to pay for the ale, and had already taken out my purse to do so, but my companion seemed quite wounded by the proposal, and begged me to put my money back again. He had invited me in, he urged, and I was therefore his guest. The proposition was so reasonable that I had not a word to say against it, and at once gave up the point.

While we stood chatting at the bar on commonplace topics, — the weather, the streets, and so on, — a stranger entered and joined in our conversation almost before I had noticed his presence. I say he joined in our conversation, but I ought to add that in a very few minutes he took the lion's share of it.

Stranger No. 1 I have already described as looking only partly like a gentleman. Stranger No. 2, it may fairly be said, did not look like a gentleman at all. He was a big, burly fellow, with a rough pilot coat, though the weather was anything but cold; a profusion of whiskers and beard, clumsy, fat fingers, a large face, a low forehead, small eyes, and an expression of countenance made up in about equal proportions of intense stupidity and overwhelming self-conceit.

Stupid and self-conceited enough in all conscience he soon proved himself to be. His physical prowess was the theme on which he boasted most. There was nothing he was incapable of accomplishing. He could throw a weight farther than any one else, he could run faster and longer, he could jump higher; not a man in all England was his equal in athletic feats.

Stranger No. 1, who, as I said before, seemed a quiet, inoffensive sort of man, was evidently annoyed by the intrusion of this vulgar fellow into our company, especially as he wanted to treat us to some sherry, and ostentatiously displayed a whole handful of gold and a pile of bank-notes, to show that he had the means. But when he began to boast of his physical powers, No. 1 was fairly warmed at what he evidently deemed mere empty brag, and took up the matter in earnest.

"I 'll tell you what," he said, "I don't mind betting you half a sovereign that I 'll throw a weight farther than you, — any weight you like, and this gentleman here will no doubt kindly see all fair between us."

He referred, of course, to me.

"All right, I 've not the slightest objection," said I.

"Come on, then," eagerly exclaimed No. 2, "I 'm your man. Let 's settle it at once."

But here an unexpected difficulty arose. The tavern we were in had not been built with any view of testing physical capacity, and accordingly there was no part of the premises in which accommodation had been provided for throwing weights. However, No. 2 soon suggested means of escape from this perplexity. He knew, he said, a "nice quiet little place" over the water, where we should find what we wanted, and a cab would take us there in no time. No. 1 looked appealingly at me, as though to ascertain if I would acquiesce in this arrangement, and as I offered no objection, we jumped into a cab, and drove off, crossing Waterloo Bridge, and soon becoming lost in the maze of obscure small streets which abound in that very choice part of London. Our ride did not occupy much time; but during that time No. 2 contrived to make us acquainted with the whole of his private history. Of this the principal and most interesting fact was,

that his uncle had just died and left him a large fortune. He had been to the bank that day, he said, and drawn out some of the money; but there was plenty more left, and he meant to enjoy himself now, and no mistake about it. What was the good of money unless you spent it? &c., &c.

Here I may as well state, lest the reader should think me simpler than I am, that neither the quiet modesty of one of my companions, nor the boisterous braggadocio of the other, had deceived me as to their true character and object. Directly they fairly began to play their respective parts, directly I saw that my vulgar friend's sovereigns were card counters at a shilling a dozen, and that his notes were drawn upon the Bank of Engraving, I saw clearly enough I was in the hands of a couple of skittle sharpers, intent upon making me their victim. I had not the slightest intention of allowing them to gratify this very natural desire, but being anxious to see for myself something of the manners and the *modus operandi* of this class of men, of whom I had so often read in the police reports, I fell in with their humor, and allowed them to think me their dupe.

My boasting companion was still talking of his money, and of his intention to enjoy himself with it, when the cab pulled up at our destination. It was a small public house, in a shabby and secluded street; standing back some ten or fifteen yards from the footway, it was approached by a dismal little garden, or what had once been a garden, with a couple of summer-houses on one side, some tottering trellis-work on the other, and a few tables and benches scattered here and there on either side of the path. At the back of the house there was an open gravelled space, not quite so large as the plot in front, and at the bottom of this stood, as I had expected, a covered skittle alley, towards which we at once made our way.

The wealthy gentleman had been merely communicative and boastful in the cab, but directly he saw the skittles, all his swaggering recklessness at once returned. The first thing he wanted to do was to bet me five shillings that the ball was made, not of wood, but of metal.

"Why," said I, adapting the tone of my conversation to the company I was in, "you must be a fool to talk like that. Look here." And I took up the ball and chipped it with my penknife. "I tell you what it is, my friend," I added; "if you get making bets like that, you 'll soon lose all your money, I can tell you."

This rebuke, uttered in a manner which in no way implied suspicion of either of my companions, inspired them both, I verily believe, with stronger confidence in their powers of deception, and their chance of fleecing me. I had been simple enough to refuse five shillings when they were, so to speak, thrust into my hands. Of what other weakness might I not be capable?

My remark, however, apparently produced no effect. In a few minutes, the swaggering gentleman was vaunting his powers as boisterously as ever, throwing out all sorts of wild challenges, and offering any number of ridiculous bets.

I ought, perhaps, to mention that there was one point upon which I certainly felt some apprehension. It was, lest anything I might drink with my companions should be drugged. While I remained in full possession of my faculties, I was quite sure of myself; but I had heard so much of the stupefying effects of drugged liquor, that I was by no means anxious to experience them in my own person. Accordingly, from the moment I entered the public house, I determined to take the refreshment department exclusively into my own hands.

"Now," said I to my modest companion, "you stood treat before, so it 's my turn now. What are you going to have? I shall have some more ale. And what 's your tipple, sir?" I asked, addressing the gentleman who had recently come into his uncle's money.

Well, he would have some cold gin-and-water, he said, — he had not yet had time to acquire aristocratic tastes, — and my other companion decided upon following my course and sticking to ale; so this matter was soon settled. As a measure of precaution and not of predilection, I fraternally drank out of the same pewter as No. 1, for we eschewed glasses, and took care that he always had the first draught. But I soon saw that neither he nor his confederate cared to drink themselves, or to make me drink. They were evidently on another tack.

It would weary rather than interest the reader, were I to describe all the attempts made by these two worthies to entrap me. Soon after we entered the public house we were joined by a third stranger, a lean young man, of mild aspect and fawning manners, with whom the bragging gentleman after a while began to play at skittles. It became at once obvious, or was made to seem so, that the latter had not the slightest chance against the former. Yet, notwithstanding this circumstance, No. 2 made the most foolish bets with No. 1, and although he almost invariably lost, returned to the charge again and again, offering odds to me in the same reckless manner, and increasing his stakes with every fresh defeat. Keeping to the part I had at first assumed, I roughly refused all his offers; told him he was only throwing his money away, and that, if he did n't take care what sort of company he got into, he would assuredly be cleared out of all he possessed. When this sort of thing had gone on for about two or three hours, I ostentatiously pulled out a large and valuable gold watch, said I had an appointment in the city with a gentleman, who was to pay me some money, — which was true; expressed my regret that I could not stop any longer, and bade my companions adieu. That they were sorry to part with me I can readily believe; but, as I made an appointment to meet them the next day, so that we might all go to another "nice little place," a few miles out of town, they still had hope to fall back upon. They had failed for the time; but I feel convinced they were certain of success with me when we next met. When we next meet, perhaps they may.

Before I close this paper, let me offer a few remarks. First, I feel bound to admit that better acting of its kind than that of these two fellows I never saw on or off the stage. It was carefully and consistently carried out from first to last, never lost sight of for an instant, and never overdone. While attempting to take me in, my two friends never exchanged knowing glances, or made signals to each other, or did anything, in fact, to arouse my suspicions. As for the lean young man, he kept in the background aloof from me, and was, I suppose, only an auxiliary hand. When the two leading performers found me somewhat tougher than they probably had expected, they expressed no surprise and no annoyance. We parted as though we had been sworn friends for years.

My impression is, that those who fall victims to this class of men are generally self-conceited persons

who have an exaggerated idea of their own acuteness, an over-confident belief that they cannot be imposed upon. "Young men from the country" are famous for this kind of foolish presumption, and they are, of course, the easiest prey. Yet, within the circle of my own acquaintance, I knew a sensible young man, born and bred in London, who allowed himself to be duped in this manner. He was standing looking in at a shop window, when a stranger, of about his own age, soft-spoken and plausible, joined him, entered into a conversation, walked on with him, and finally asked him if he had ever played at skittles. The sensible young man replied in the negative. How curious! The stranger had never played, either. What fun it would be to see what sort of a game it was. To be brief, they went to a skittle-ground, played for some little time with varying success, the sensible young man ultimately losing the ten or fifteen shillings he had about him, and actually agreeing to go home to get some more money. While the excitement of the game lasted he had no suspicion he was being robbed. It was not until half an hour's walking in the fresh air had somewhat cooled him that he recognized the fact.

With many persons, too, such reckless stupidity and self-conceit as were exhibited by one of my companions form too alluring a bait to be resisted. Here is a vulgar, boasting fellow, overflowing with money, who is positively asking people to ease him of some of it, and who taunts them if they do not comply with his request.

Over and over again my modest friend looked at me, when the other was loudest in his boasting, and seemed to say, "What a fool! Did you ever meet with such a donkey?" Indeed, once he softly said to me, "I wonder you don't take his offer, sir. He seems determined to lose his money, and why should n't you win some of it?" This is the bait which, when all others — and there are plenty more — have been refused, rarely fails, I fancy, to be swallowed whole. Once taken, the rest must be easy work. Directly the dupe begins to lose, after having felt that to do so was impossible, his head appears to utterly fail him. He is seized with a sort of infatuation. In the January of this year, for instance, a "gentleman from the country" was induced to go and pawn his watch, in order to test its genuineness; a bet, of which he was to have half, being the inducement. I recollect the case, too, of a tradesman who, losing all he had about him, went home, and fetched £200 from his cash-box; staked that, so certain was he of winning, and of course soon found himself without a penny. I am inclined to think, therefore, that all, or nearly all, who are fleeced by such fellows as those I made the acquaintance of, are really the victims of their own desire to profit by what appears to be wrong-headed ignorance and stupidity. If ever I am myself taken in, perhaps I may change my opinion.

BALLOONING.

[Translated for EVERY SATURDAY, from the *Journal pour Tous.*]

"Is it possible to steer a balloon?" asked Guyton de Morveau, in 1784; and his reply was, that, before answering such a question, it was essential to determine what was meant by steering. "Shall we consider that we control the direction of a balloon only when we have the power of going from one place to another at all times, in all winds and weathers, and of returning under the same conditions? It is thus that some persons ask of an art, still in its infancy, a degree of perfection which has not been granted by ages of experience to the art of navigating the sea. Such base their hopes on as mutable a foundation as the chance of squaring the circle or commanding perpetual motion. The absurdity of this expectation has been often set forth; and we have not yet abandoned transit by water, because we are still at the mercy, occasionally, of wind and weather. It is not, then, unreasonable to contrive how to profit by the same means in balloons that we make use of in ships, that is, of taking advantage of good winds and counteracting bad ones. We shall have done already sufficient for the glories of invention and for promised usefulness, if the success of a voyage to a fixed destination is only subordinate to these conditions."

Such words indicate the aim this aeronautic amateur sought ever to consider as that of his ambition. Most have taken as a postulate that which Guyton pronounces absurd; and have concluded, because of their failure to discover the means of going from one place to another in all sorts of weather, that their balloons were worthless. This has been the first error; and the second has grown out of it, which is, that they have depended on mere theory to conduct them to the desired consummation, rather than upon repeated practical experiment, thereby mistaking the inevitable conditions in the way of all discovery. Progress of this kind is only furthered by trial. Not to make the most of what we have, imperfect though it be, is to deny ourselves the possibility of anything better.

How can we otherwise explain, than by this general error, the stationary and unproductive condition of an art of which we might rightfully expect so much of marvel? When we name the discovery of the principle itself by Montgolfier, the use of gas by Charles, the invention of the parachute by Blanchard and Garnerin, of the guide-rope by Green, have we not mentioned all that is essential in our progress as yet? Only thus much is the result of seventy years and the thousands of men who have studied the problem. Steamboats, railways, and the magnetic telegraph date not back near as far. The daguerreotype and galvanism have not been for longer than a score of years before the world.

Has aerostation added anything to our meteorological knowledge? Do we understand the winds better? No. Is it not pretty evident, then, that we have gone astray?

How can one perfect navigation unless by pursuing it? We must improve the balloonist's art in the air itself. If we had appreciated the value of this invention, we should not have been content with anything short of its grand possibilities. We should have sought the means of prolonging as much as possible our aerial voyages; and, if we had turned our attention to practice rather than to theory, we should have found out what we now stand in need of, namely, a perfectly impermeable envelope, and the means of rising and falling in the air without loss of power. At the same time, we ought to have acquired some positive knowledge of the atmosphere and its laws. This last is indispensable to a perfect art. A knowledge of atmospheric currents would soon have permitted, first, short voyages to designated points, and then longer ones. Next would have come the power of moving, apart from the direction of the wind, and the means of rising and falling without loss of any kind, and a method of

propulsion in calms. Such are some of the possibilities which to-day we are without accomplishing, that we might have attained had we not so blindly devoted ourselves to mere theory.

The advantage of the wind to the balloonist is immense, and we do not yet comprehend its extent. Three kinds are at our service. *First*, the trade-winds, constant and regular, and prevailing between the thirtieth parallels of latitude on either side of the equator. By these the aeronaut can accomplish a good part of the circuit of the globe. *Second*, periodical winds, such as those that blow from the North Sea to the Baltic, facilitating the passage of the Sound, alternating with such as blow in the opposite direction at other seasons. There are other winds which are regulated by a more confined periodicity, though, on the other hand, they act in much narrower limits, as in the case of land and sea breezes. *Third*, accidental winds, and of these the aeronaut can make at least as much as the navigator.

The weather-cock will frequently indicate a direction of the wind quite different from that taken by the clouds. This only proves what the narratives of balloonists have abundantly shown,— that we can find varied currents as we rise in the same column of air. M. Charles, on his first ascension, let go a small trial-balloon, and it descended in an opposite direction to that this courageous experimentalist was pursuing. Guyton de Morveau relates, that in his experiments of the 25th of April, he started off with a very strong west-northwest wind, which he ceased to feel when he had ascended three hundred feet. At a still higher stage, while he was sailing along very leisurely, he observed a white cloud four hundred fathoms below, crossing his track. When he approached the earth, the balloon, which before had moved very slowly, took a breeze that bore it along with great rapidity. Monk Mason reports, that when he made his magnificent ascension of the 7th of November, 1836, in company with Green and Holland, two and a half hours after leaving London they perceived that the wind was going to carry them over the German Ocean. Mr. Green threw out ballast, and, when the balloon rose, an upper current took them back over Dover. We read in Blanchard's account of his first voyage, that this intrepid aeronaut, having escaped, by throwing over ballast, from some furious currents, which threatened to destroy his balloon, was borne immediately along by a wind, that took him rapidly from the point where he had emerged. In the narrative that Cavallo gives of the ascension of Vincent Lunardi (the first which took place in England, 13th September, 1784), it appears that the balloon set out in a northwest direction, and at a great elevation took another course almost north, although the wind remained the same below.

More fortunate than the mariner, the balloonist, instead of wrestling with a contrary wind, or waiting a favorable one in port, can by rising to other currents find one to his liking. A very simple experiment, originating with Franklin, shows another advantage that the aeronaut has over the sailor.

Let there be two chambers unequally heated, and then open a channel between them, and we have immediately a double current, — one at the bottom from the cold to the hot, and one above from the hot to the cold, the two being separated by a stratum of calm. A wind in one direction always indicates another in the opposite, that is to say, a counter-current. Land and sea breezes are thus accompanied. It is probable that there is in the tropics, a current higher up, going in the opposite direction to those known as the trade-winds; in fact, it has been noticed on the peak of Teneriffe. In 1835, the ashes thrown up by the volcano of Guatemala fell, some hours later, in the streets of Kingston, in Jamaica, whither they had been carried by a wind from the west, prevailing in the upper air.

Let us see something of what the aeronaut can accomplish with these counter-currents. On the 8th of August, 1782, Robertson made an ascension at Lisbon. The wind had borne him three leagues beyond the Tagus, when he observed above him that the clouds were flying in the opposite direction. He conceived suddenly the idea of letting this current bear him back over the city. He threw out ballast and reached an altitude of sixteen hundred fathoms, and the experiment succeeded. He repassed the Tagus, came over Lisbon, and landed beyond the city, so that those who assisted at his start were still at hand to help his landing.

There are in our opinion four conditions to fulfil in making aerial voyages regular.

I. An impervious skin to the balloon, or at least so nearly so, that it will retain the gas for a week or more.

II. The power of rising and sinking to take advantage of other currents, when we are thwarted by such as we are in.

Every one knows that, in the present state of our knowledge, the aeronaut throws out ballast to rise. Under three conditions he lets the gas escape, — first, when the rarefied air permits the gas to distend the balloon dangerously; second, when, having reached a favorable current, he wishes to cease rising; and third, when the solar heat expands the gas too much. He also uses this power and that of ballast to regulate his momentum on landing. This is all very simple, but any one can see its many inconveniences; and the danger, when ballast and gas have been so far exhausted that you are left unprovided for contingencies. The frightful voyage of Blanchard and Jeffries in crossing the English Channel shows to what perils these manœuvres subject the aeronaut. Threatened with sinking into the sea, these adventurers threw over all their ballast, without stopping their downward course. Their books, instruments, provisions followed. Next, their clothes, and finally the wherry itself, so that they landed on the French coast, clinging naked to the cords. From the beginning of the art, the dangers of this practice have been apparent. Guyton de Morveau looked forward to some substitute as the art developed itself. To find this is as much a desideratum now as then.

III. This condition relates to a matter little considered, namely, the dilation arising from solar heat. When the Duc de Chartres went up with the brothers Robert, and was carried suddenly above the clouds, the balloon so expanded under the heat of the sun that it was in danger of bursting. The valve being out of order, the Duc cut the balloon in two places, when it rapidly descended. Blanchard relates that, in one of his voyages, his balloon swelled so much under the action of the heat that it snapped in every part. The narrative of MM. Biot and Gay-Lussac is more conclusive. They left the Conservatoire des Arts et Métiers on the 24th of August, 1804, at ten o'clock in the morning, and, reaching a height of 3,724 metres, were surprised at not finding it cold; but, on the contrary, the sun was so powerful that they gladly pulled off the gloves they had worn at the start, and the

animals with them did not appear to suffer from the rarity of the air, while a bee flew humming away. Guyton de Morveau, in one of his statements, avers that the lowering of the mercury in the barometer was hardly perceptible, when the dilatation was already considerable; and he adds, that the continuous flow of gas from the upper valve, like a thick smoke, made it seem as if the balloon had been rent in that spot. The explanation is this, that the gas confined in a case coated with resin is raised in temperature much more rapidly than the outer air. The history of aerostation is filled with instances. One day, Morveau, wishing to repair his balloon, had taken it to his garden and filled it with open air by means of bellows. The morning sun was shining, and presently the balloon began to roll about, and at one time it came near escaping two persons who sought to retain it. Morveau, having opened the valve, the air which issued almost painfully affected the eyes, and was found to be four degrees warmer than that without. In another instance, the same observer noted a far greater difference, namely, that of thirty-nine to twenty-three degrees. At another time, the same balloon was heated so much that it sprung up to an elevation of forty-three feet, with a weight to be sustained of one hundred and twenty-five kilogrammes, and then burst its confinement, and when a young man tried to hold it by seizing a cord and winding it about his wrist, he was carried over a wall, nine feet high, and landed beyond. The balloon continued its way, traversing a public promenade, to the great wonderment of all, and settled down one hundred and fifty paces distant.

IV. The necessity of some means of steering a balloon has been felt from the start. "It is not well to deceive ourselves into believing," wrote Guyton de Morveau, "that here is not a great difficulty."

Such, then, are the four conditions, in our opinion, which demand assuredly neither great genius nor enormous capital; and he that shall first satisfy them will plan one of the grandest results possible, — a highway in the air.

HORSE-RACING IN INDIA.

THE monsoon, whose first stormy shower was welcomed with delight, has become dreary and monotonous in the extreme, and almost makes one wish it were hot weather again. Everything has become damp and mildewed; clothes are lying rotting in trunks, from which it is impossible to take them to be aired, by reason of there being no sun; boots are covered with a Stilton-like mould; every corner of the bedroom has been tried in vain for a place for the bed without catching the drippings from the roof; the sitting-room is studded with basins and tubs, to catch the water and save the bamboo-matting; the ceiling-cloth is liscolored in many places, and looks as if bottled porter had been kept above, and had burst; the furniture is damp and slimy; and the neat gravel drive in front of the house is cut up like the bed of a dry watercourse.

Towards the middle of September, one or two bright days in succession, with an occasional shower at night, and a delightful freshness in the morning, proclaim the approaching close of the monsoon; and now that there is a prospect of a little dry weather, the subject of getting up Skye races in December is started at one or other of the mess-tables. It is of tropical growth, no sooner conceived than matured; a meeting is called, the subject is discussed, stewards and secretary are chosen, — the two latter without heartburning. The majority of the residents subscribe liberally, and there are but few in the cantonment who object. These can be divided into three classes: those whose wives are afraid that they will ride, and who consequently object, on the ground of its being wicked; screws, who do not possess an animal that has a ghost of a chance, but who, somehow, are always lingering about the stables during training; lastly, those who really do think it wicked.

At length the programme appears, full of mistakes, printed by the local government or some amateur press, and many young hearts are quite in a flutter. There is no parade to-morrow morning, so Tomkins will try what Budmash's paces are like. Budmash has been laid up for nearly three months in consequence of the rain, and has been fed as well all the time as if he were in training for the Derby. He has got past the period of bucking with delight, on going into the fresh air, by reason that he is too fat, and feels more inclined to rest quietly in his stable than carry his owner even for a short walk. But his owner knows as much about a horse as he does about a pig; for he is firmly of opinion that Budmash's plethoric and sleek look expresses the acme of condition.

Next morning at daylight, Budmash, saddled and bridled, is led up and down in front of his master's door. He has not long to wait; for Tomkins, who has scarcely slept a wink, has decided on ordering the "dersie" to rig up a nobby jacket and cap; and has ridden the race in his mind's eye some fifty times during the night. He has arrayed himself in a pair of thick Melton cords and top-boots, which make him feel uncomfortably hot; but that is immaterial, the get-up being indispensable to getting the pace out of Budmash. He has discarded the hunting-crop, and has substituted a sharp-cutting whalebone racing-whip.

On mounting, he tells the "ghorawallah" to remain where he is, that he will be back directly, and walks quietly out of his compound in the direction of the race-course. Budmash is by no means lively, and responds with a grunt and a wheeze to his master's spurs. He carries his ears in a flabby manner, and stumbles over every little piece of uneven ground he comes to. On arriving at the race-course, Tomkins gathers up the reins in both hands, and, sticking the spurs into Budmash, strives to raise himself in the saddle, orthodox jockey fashion; but Budmash does not at once, as he ought, start into a swinging gallop, but sets up a little wheeze-and-puff canter, which causes poor Tomkins first to sway on his neck and then sit down on the saddle. In the attempt to regain the jockey position, too much aid is derived from the reins; whereupon Budmash thinks it a signal to stop, and does so accordingly. The morning is hot and close, the cords and boots are uncomfortable, and by this time Tomkins, being out of temper, lets Budmash have the whip pretty smartly, which so astonishes him that he actually manages to get up a gallop, blowing like a grampus all the time.

The great attention that he pays to his seat, and the uproar that Budmash makes, to say nothing of the wish being "father to the thought," make Tomkins believe that Budmash really has speed, and he straightway determines to enter him for the Galloway Plate. After about half a mile of wheezing and puffing, Budmash is pulled up, and his head

turned towards home. His look is dejected, his eyeballs are bloodshot, his flanks heave painfully. But Tomkins is delighted; he wipes his own brow, and pats Budmash's neck, and thinks of the honors he is about to achieve. After Tomkins has refreshed himself with a bath, put on some rather lighter clothes, and is about to sit down to a cup of coffee and a cheroot, his horsekeeper makes his appearance in the verandah, holding up the gram-bag, saying, "Kutch bee ne kia, sahib." "Eh! what?" says Tomkins, and calls the boy to ask the reason why. The boy and the horsekeeper converse rapidly in Tamil, the latter holding up the three first fingers, with the thumb of the right hand closed, indicating the very small quantity Budmash has consumed. The horsekeeper has a broad grin on his face, as he tells the boy the pace was "Rumbo quick." "Well," says Tomkins, "what is it?" "Paupiah tell our horse can't eat gram. Master too much galloping," replies the boy. "Pooh! what nonsense!" says Tomkins. "I expect the gram 's sour." But the gram, on inspection, is found to be quite fresh and warm, having only just been boiled; so Tomkins, not knowing what to do, says, "Never mind; give it him at tiffin-time," and returns to his coffee and cheroot, and thinks on the cares of an owner of race-horses. Budmash consumes a small portion of the gram at tiffin-time, and Tomkins's spirits begin to rise again. About eleven A. M. the boy may be seen, holding an amicable conversation with the horsekeeper. During the time that Tomkins has gone to a court-martial, both are squatted, cross-legged, on the ground, under the pandal in front of the stable, and are enjoying intensely two of their master's Trichinopoly cheroots.

The horsekeeper has seen better days; that is, he was formerly in a richer man's service, — a man who kept a good many horses, and delighted in racing. He knows a thing or two, and determines to profit by his knowledge; not that he intends to help his master to obtain real condition, — that would involve a deal of extra trouble to himself, — but he intends to suggest the purchase of sundry articles useful in training, and out of which he and the boy may make their profit. The boy opens the ball in the evening, whilst he is assisting Tomkins to dress for dinner. He commences by saying, "I think master going to make race." "Eh," says Tomkins, "who told you I was?" blushing at the thought that somebody might have been watching him in the morning. "Master tell Dusie, morning-time, to make one racing-jacket." "O, ah!" says Tomkins, relieved; "yes, I shall run Budmash." "That Paupiah very good man," says the boy. "He live long time with Judge Dowdswell, sahib; he understand that business."

Tomkins is glad of this, and asks the boy whether the horsekeeper knows the reason why Budmash refused his food in the morning? The boy tells him that the horsekeeper recommends that a boiled sheep's head should be given with the gram night and morning. Tomkins has heard that this is a native remedy for fattening horses, so orders the sheep's head to be regularly provided. The boy takes care that this order is attended to, and he and the horsekeeper enjoy a banquet of three quarters of each sheep's head daily, — Budmash (perhaps) getting the remainder.

It is not to be supposed that all who intend entering for the races pursue the course above described. There are three or four men in or near the station who will bring (what is considered up country) first-class animals in first-class order to the post. The collector is a thorough sportsman, and keeps several horses for racing, besides greyhounds for fox and jackal hunting. The judge has a couple of good horses that he intends trying his luck with; and the rajah, who has subscribed liberally, and given a cup, has some that will require a great deal of beating. Besides these, there are two or three of the officers of the Queen's regiment, a sporting captain or two of the native cavalry and infantry, then quartered at the station, who have some good horses among them, and intend training. The minor events of the meeting, such as the Hack Stakes, Cheroot Stakes, and Pony Races, are nearly all confined to the genus of which Mr. Tomkins is a type.

Things go on smoothly, with here and there the occasional absence of a horse for a week or two; but the break-downs are not so frequent as might be supposed from the hard, sandy nature of the soil they take their gallops on. At about the commencement of December (the races having been fixed for the 20th), a fresh excitement takes place. Owners commence taking trials out of their horses by timing them. These trials are generally made openly, in the presence of a large number of spectators, it being universally understood that none but the owner and his servants are to attempt to ascertain the time of the horse under trial; and as it is impossible for a looker-on to gain information from seeing a horse galloping, no one but the owner is the wiser.

The meeting is to extend over a week, racing being on every alternate day. This is to allow time for the lotteries to be held. On the day prior to the first day's racing there is a monster tiffin at one of the mess-houses, and, after the cloth has been removed, the lotteries on the races of the first day of the meeting commence. It is by means of these lotteries alone that an owner is enabled to back his horse, or to stand to win any more than the actual stakes, as there is seldom or ever any betting. The lotteries are carried on upon a principle entirely Indian. There is a lottery to each race. Each ticket is priced two rupees, and, after all the numbers have been taken, two vases, one containing the names of the horses that are going to run, together with some blanks, the other containing all the numbers of the tickets taken in the lottery, are placed upon the table.

The drawer plunges his hand into the vase containing the numbers of the lottery, takes out a ticket, and calls the number marked on it; he then draws from the other vase; and should the paper drawn contain the name of a horse, the person who has taken that number in the lottery is considered to have drawn the horse named. After all the horses have been drawn, the horse first drawn is put up to auction, and the highest bidder pays the amount he has bid for the horse to the lottery, and a like amount to the person who drew it. Of course, should the drawer be of a speculative turn, and consider the horse's chance a good one, and intend buying him in, he has double the advantage of the rest of the bidders, having only to pay the amount he bids to the lottery; but very few, besides owners, care to do this, as they really can know little about the animals, and are content to have a safe win of the amount bid for the horse they have drawn. There is sometimes great competition between the owners of horses, each trying to obtain the horse of the opponent whom he deems most dangerous. And great pots are frequently upset, by an owner selling for a small price a horse he has drawn, —

which horse ultimately wins the race, — and buying in for a large price one which he imagines will win, and which does not. The man who has purchased at the lottery the name of the horse that wins gains the lottery. It will be seen that a very pretty little sum can be frequently obtained in this manner. Supposing the lotteries to have filled to the number of five hundred tickets, that six horses start, and that the average price obtained at the sale of the horses is three hundred rupees, there will be a sum-total of two thousand eight hundred rupees for the lucky purchaser of the winning horse.

As there are several "weight for age" and "weight for inches" races, the afternoon of the day previous to the first day's racing is fixed for ageing and measuring. During the afternoon a great number of visitors arrive from the small stations near the cantonment, all intent upon enjoying themselves at the races, and balls, parties, picnics, and so forth, that are sure to follow. The waste ground round about the course is studded with tents of all kinds and descriptions. All the messes are crammed, at one or two of the larger houses dinner-parties are given, and all seem intent upon enjoying Christmas as much as if they were in Old England.

A good hour before daylight the "dwellers in tents" are aroused by the continuous war of the multitude, already on their way to the course. Natives are excessively fond of amusement, and even the stingiest Brahmin will go miles to see a samasha. Servants are running about, carrying coffee and articles of apparel, and nearly all have their heads tied up in cloths, so that only their eyes and noses are visible, the morning air being chilly. The morning breaks as if the whole place had been suddenly lighted with gas, and the grand stand rapidly begins to fill. At six a trumpet sounds "boot and saddle" (for there is no bell), and one by one the competitors for the "Derby" — the first race of the day — may be seen emerging from their rubbing-sheds

The first to make his appearance is Black Diamond, a perfect picture of an Arab; he is so round that he would almost lead you to suppose he was too fat to race, but if you felt him you would find him as hard as a cricket-ball, and without a particle of adipose matter. It is his round barrel that gives him his fleshy appearance. The collector is walking beside him, giving his jockey final instructions. "I don't want him to win," he says, "if the Marquis can, for he has to run again in the race after next; but if you see the Marquis holding out signals, let him out and try to do the trick. Now give him a canter, and let's see how he goes." The Marquis soon makes his appearance; he is a bright bay, rather leggy, and his quarters are by no means filled with muscle. He is too young for this work. Arabs ought never to be raced until they arrive at maturity; but the collector is very sweet on him. He is giving elaborate instructions in Tamil to the native jockey, who will have cast them all to the winds in the first hundred yards. He is a good lad for riding the horses at their gallops, but can't keep his head in a race. He sets the bay going, and well he does go too, bringing his hind legs well under him, with an even and machine-like stroke, and if it were half a mile he would probably win; but a mile and a half, and that choking hill, is too much to ask of the youngster.

The collector heaves a gratified sigh as he watches him, and on his way to the post reiterates his instructions to the jock. But what is the cause of that hum of admiration along the line of native spectators? It is the rajah's horse Nusseeb. He is a dark iron-gray, with very powerful arms and loins, and stands over a deal of ground; he has rather a nervous and timid look, as he walks between the line of spectators. He knows what is in store for him, for it is not his first race by a good many. Captain Hawk rides him. The start takes place a mile and a half from the stand, at the commencement of the straight run in, and all eyes and glasses are turned that way. Now they are turning; here they come! No; it's a false start; that fool of a fellow did n't drop his flag. There! they 'll go this time. Yes, they 're off!

The Marquis keeps the lead for more than a mile, when Nusseeb is seen to come through his horses and take it up. Black Diamond's jockey sees that it 's all up with the Marquis, and giving Black Diamond, who has been going well within himself, a shake, draws a little closer to the rajah's horse. The rest are out of the race; as they sweep round the turn into the straight, "Nusseeb" is two lengths ahead, and Hawk is sitting as still as a mouse. As they approach the distance-post, Black Diamond's jockey sits down and gives his horse a strong pull, then raising his hands a little, gives him a shake, pricks him with the spur, and the brave little animal jumps forward, overhauling the gray at every stride. Hawk turns his head round anxiously two or three times, but otherwise does not move an inch; he knows that, if he does, his horse will shut up. The Black's nose is now level with his horse's quarter; but there is only fifty yards more, and the Black begins to wabble. His jockey makes a last effort, but can only reach the gray's neck, who, as he passes the judge's chair, is greeted with a burst of applause.

The next race is the St. Leger, for all horses; additional weight to that carried by Arabs being imposed on English, Australian, Cape, and country-bred horses, according to the scale laid down in the Calcutta Turf Club rules. The rajah has a large and magnificent Arab horse, called Hussar, engaged in it. He is so large for an Arab, that many declare him to be a Persian; but be his breed what it may, he is a fine powerful horse and good performer. The collector has two. The Emperor, an Australian, whose sire and dam were thoroughbreds, imported into Australia from England. He has already earned a reputation and paid his expenses, and a little over; but, like all Australians, he is very uncertain, and is as likely to turn rusty at the start as not. His other horse has not found favor with the public. He certainly does look as if he had just come from the shafts of a London Hansom cab. His near fore leg has a herring-bone-stitch-like appearance, indicative of the stringent measures that have been adopted to keep his sinews in their place. He is so finely drawn, that the breastplate he wears seems a wise precaution. His ragged hips and angular frame, without a particle of extra flesh on it, do not add to his appearance, and the spectator thinks that he has been most appropriately named the Screw. The young officer who rode Black Diamond is riding him quietly up the course, and as he goes with his ewe-neck stretched out and his nose poked forward, one can scarcely imagine the collector in his senses to attempt to compete with the rajah's beautiful horse.

The Screw was originally a troop horse, but was cast for running away, — some say, because an officer who knew his value as a racer recommended his being dismissed, and bought him in at the sale; but

this statement is doubted by those who know the immense quantity of red tape required in such proceedings; and the fact that he was bought by a griffin (whom he nearly killed) for twenty rupees some few months after he was cast, together with his being excessively hard-mouthed, and, when once set agoing, impossible to stop until he chooses to think he has won a race, tend to give the lie to this statement.

The judge is convoying to the post a very powerful-looking Australian that he thinks will do wonders. The superintendent of police, a capital rider, but a bit of a dandy, and who cares much more about the cut of his boots, breeches, and jacket than the cut of his horse, is also *en route* for the starting-post, accompanied by three more horses, whose owners, apparently, have more money than brains. This race is two miles; and the start takes place just at the foot of the hill, which almost prevents the horses being seen from the stand. Those people who have brought glasses are constantly appealed to for information, and the stand grows very impatient. The collector is almost white with anxiety; especially when he sees one, two, three, and does not know how many more false starts.

But, thank goodness, the Screw is behaving himself for a wonder; indeed, if it were otherwise, he would long ago have made his appearance in front of the stand. As much cannot be said for the Emperor, who dances in anything but an imperial manner on his hind legs; and the rajah's horse seems to be so taken with his performances, that he is trying his best to imitate him, but it is all owing to that fool on the gray, that ought to have been in the buggy, and not on a race-course. The collector's eyes ache again with constant straining, so that he is obliged to relieve them by taking down his glasses.

The ladies don't like sitting and seeing nothing, and want to know why they don't begin? The collector would very much like to relieve himself of a little extra steam by an anathema or two against the man on the gray, but wisely refrains. Ah! there they go! No, it 's a single horseman, and, horror of horrors! the collector recognizes the Dumulgundy-like action of the Screw. But, is it possible? Yes, by Jove! he has stopped him; and the beast is shaking himself like a rat; a man leads him back; and — they 're off! the Screw with two strides in one, determined not to be disappointed this time.

The pace is awful as they sweep past the stand, and the ladies wonder how any man can keep his seat at such a pace, and are sure *they* would scream and drop off. But in the short space of time taken to express this wonder the horses have completed another quarter of a mile, and the Screw, who is leading, is nearly pulling his jockey over his head. With joy the collector sees that Hawk is obliged to keep the rajah's horse going, and, barring accidents, he sees the race is won. He 's not quite sure of his jockey though, for he is a stranger to him, but came with a great reputation; and the thought of the steady way in which he tried to snatch the last race out of the fire partly reassures him. They have now got to the hill, which is sure to find out the soft ones. What a line there is now! What tailing, almost Indian file. It can hardly be called a good race, for nothing seems to have a chance against the Screw. Nothing has. The astounding fact of having been stopped when he wanted to go has put the devil into the Screw, and if he drops dead in the attempt, he 'll warm them. His jockey gives him a strong pull near the top of the hill, and the cunning old horse responds to it wonderfully, pulling himself together, and taking a breath that fairly heaves his jockey's legs out. "That 's your sort, old chap," says the jock. "I like to feel that, and I know you 've got a rush left in you, if wanted." On his dropping his hands again, the Screw falls into his old Dumulgundy-like action, holding the race as safe as a church. Hawk tries a rush at the distance, but Hussar only manages to decrease the distance from the Screw by a length, then dies away to nothing, and is passed by the judge's horse, but cannot overhaul the Screw who canters in, hands down, a winner of upwards of two thousand rupees.

After the Young Prince's Purse, there are only two races left for decision, and the spectators (and I dare say my readers too) are glad of it, for the day is getting excessively warm. Some twenty animals of the most wretched and unracer-like appearance are brought out for the Hack Stakes. There are Roman-nosed broken-kneed Persians, who do duty in buggies during the rest of the year; hide-bound animals, that have been cast from the artillery and cavalry for incurable mange; one or two bow-kneed but fine-framed old animals, who (if they could speak) could tell pitiful tales of the career of a high-mettled racer; and — yes — Budmash, mounted by Tomkins in a resplendent green jacket, with yellow belt. The race is soon over, for the starter did not care to be kept broiling in the sun by the unworkmanlike manœuvres of the would-be jockeys; and after one false start, in which a hot-brained youth has come away the whole length of the course alone in his glory, warns the rest that, head or tail foremost, he WILL start them this time. The horses run the race from end to end without any assistance from their riders, and it is won by a quondam old racer, who adds another leaf to his autumn-tinged laurels.

The Pony Race is rather exciting, the terms of the race being that the second pony is to get a portion of the stakes, and that the last is to pay the third pony's entrance fee, — a provision sure to make each competitor try his best; for, although he may see that he has no chance of obtaining first or second honors, yet he cannot afford to pull up and walk in, lest he should have to pay the entrance-fee of the third. But hallo! who is this? It is the doctor in a gaudy racing-jacket, a pair of trousers with straps, and a long pair of military spurs. He is greeted with roars of laughter as he passes the stand, and cries of two to one on the doctor. Then some one explains that, at mess the other night, the doctor threw out hints that he had had a rather brilliant career on the English turf, before he entered the service; whereupon Simpkins pounced upon him, and succeeded in getting him to promise to ride his pony.

The course is only a quarter of a mile, and they are soon started; they are all pretty close together, with the exception of the doctor, who got off ill in his endeavors to keep his seat, pulls his pony back, and is hopelessly out of the race. It is a near thing between the two first, both well-known performers. Some seconds after the race is finished, the doctor canters past, and is greeted with vociferous cheering. "Thank you, doctor," says the owner of the third pony. "Why?" says the doctor. "You pay my stake." The doctor is wroth, and declares that he never saw that proviso, that it is a most absurd one, and that he never heard of it in England; but

his wrath is of no avail, and he goes off home in great dudgeon, and does not appear again during the rest of the meeting. The stand is soon emptied, and the great concourse of natives go jabbering towards the bazaar.

The second and third days' racing are similar to the first: the rajah and the collector dividing the large prizes pretty equally; and the smaller being so distributed by the aid of handicaps, that none are great losers, and many are slight winners. The owners of horses are pleased with their success, and the visitors with their reception, and the numerous balls and picnics. Thus, "the races" become an epoch from which future events will be calculated, until the next meeting.

ENGLAND'S NATIONAL DRINK.

THE origin of the use of malt liquor, or a drink made by steeping grain in water, and afterwards fermenting it, seems lost in the night of antiquity. Herodotus attributes the discovery of the art of brewing to Isis, the wife of Osiris. What is certain is, that the Egyptians, so versed in all the industrial arts of domestic life, included brewing among the number. Pelusium, situated on one of the mouths of the Nile, was at a very remote epoch particularly celebrated for its manufacture of malt liquors, — one called *carmi*, sweet and glutinous, the other named *zythum*, more attenuated and less sweet, and probably analogous to modern beer. Pliny, the Naturalist, states that in his time a drink, made from fermented grain, was in general use under various names amongst all the nations of Western Europe. According to Isodorus and Orasius, the ancient Britons and other Celtic nations practised a mode of preparing an intoxicating drink from grain which did not differ materially from our modern mode of brewing. Tacitus states that the ancient Germans for their drink drew a liquor from barley or other grain and fermented it, so as to make it resemble wine. How deeply our Scandinavian ancestors were imbued with the merits of malt liquor appears from the fact that it was a cardinal point of belief amongst them that quaffing copious draughts of ale formed one of the chief felicities of their heroes in the halls of Odin.

The first mention of ale in English law occurs as early as the Heptarchy, in the laws of Ina, King of Wessex. In Wales, and also in Scotland, it was anciently enacted that "if a farmer hath no mead, he shall pay two casks of spiced ale, or four casks of common ale for one cask of mead." Ale is expressly named as one of the liquors provided for a royal banquet in the reign of Edward the Confessor. Anciently ale and bread appear to have been associated as equally *victuals*, or absolute necessaries of life. That this was the case appears from the assizes or ordinances of bread and ale which were instituted from time to time, for the purpose of regulating the price and quality of these articles. In 1266, in the reign of Henry III., a statute was passed (the preamble of which alludes to earlier statutes on the same subject) which enacted that "when a quarter of wheat was sold for 3*s.* or 3*s.* 4*d.*, and a quarter of barley for 20 pence or 24 pence, and a quarter of oats for 15 pence, brewers in cities could afford to sell two gallons of ale for 1*d.*, and out of cities three gallons for 1*d.*; and when in a town three gallons are sold for 1*d.*, out of a town they may and ought to sell four.' How completely ale was the national drink of our Anglo-Saxon forefathers is made very apparent by the fact of its incorporation in our language as the equivalent of festival when in combination with other words. Thus bride-ale (bridal) is the feast in honor of the bride, or marriage; similarly we have leet-ale, lamb-ale, Whitsun-ale. A bid-ale was when a poor man, decayed in his substance, was set up again by the contributions of his friends at a Sunday's feast. *Church-Ales*, as they are described by Pierce, Bishop of Bath and Wells, in his answer to the inquiries of Archbishop Laud, "are when the people go from afternoon prayers on Sundays to their lawful sports and pastimes in the churchyard, or in the neighborhood, or in some public-house where they drink and make merry. By the benevolence of the people at these pastimes, many poor parishes have cast their bells and beautified their churches, and raised stock for the poor." The people were fond of these recreations, and the bishop recommends them as bringing the people more willingly to church, as tending to civilize them and to compose differences among them, and as serving to increase love and unity.

The period when hops were first introduced into use in England for brewing is involved in much obscurity. On the strength of an old distich,—

> "Turkeys, carps, hops, piccarel, and beer
> Came into England all in one year,"

it has been concluded that the hop was first brought into England from Flanders in 1524. Although it is probable that the ale of our early ancestors — at least the great bulk of it — was intended to be drunk sweet and new, and that the term beer is comparatively modern, imported with the use of hops from the Continent, to designate the new liquor, the above date is certainly erroneous, for we read in the Promptorium Parvulorum, compiled in 1440, and which throws so much light upon the manners of our ancestors in the Middle Ages, "Hoppe seede for beyre." An ancient municipal record, also under the date 1432, has the following entry: "Item, payd to Davy, bere brewer, for a pyp of bere that was droncke at the Barrgeate when the furst affray was of the Ffrenshemen, vjs. viij*d.*"; and again, under the date 1497: "Half a barrel of doble bere, xx*d.* Ten gallons peny ale, x*d.*" We seem here to get an inkling that the hieroglyphic x, xx, and xxx still in use by the London brewers may possibly have originated in the practice of writing the price of the ale in Roman numerals when a certain measure of the three qualities in vogue bore the respective prices of x, xx, and xxx pence. Finally, it is certain that hops were cultivated in England in 1463, since there is extant a lease of lands, in Kent, of that date, in which a provision occurs for taking care of the underwood fit for hop-poles. Whether hops were in use in England in the time of Chaucer is an open question. The word beer does not occur in his writings, yet it would appear that London ale already possessed a character of its own by which it could be distinguished by connoisseurs; for in the "Canterbury Tales," written about 1395, we read of "the Coke": —

> "Wel coude he knowe a draught of London ale."
> *The Prologue.*

Again the miller in his prologue says: —

> "And, therefore, if that I misspeke or say,
> Wite it the ale of Southwark I you pray."

With reference to this discussion, we think it may fairly be said, that it is one of those cases in which it would not be wise to rely too much upon negative

evidence. It must be remembered that we know nothing of the ingredients employed for flavoring the spiced ale mentioned as being rated at half the value of mead and double the value of common ale, and considering that the hop is an indigenous plant, it is not impossible that it may have entered, in conjunction with alehoof, or ground-ivy (which we know to have been used for ale), and other herbs, into the composition in question. However this may be, there is much evidence which seems to point to a great increase in the use of hops in brewing during the fifteenth century, and that, like most new things, whether improvements or otherwise, the innovation encountered violent opposition. Thus, in the reign of Henry VI., Parliament was petitioned against that wicked weed called hops; and in the nineteenth year of Henry VIII. (1528), their antagonists succeeded in getting their use prohibited under severe penalties; and an ale-man, having brought an action against his brewer for spoiling his ale by putting in a certain weed called a hop, recovered damages. The king had probably been gained over by the opposition; at any rate, he appears to have been a victim to these prejudices; for, in 1530, he gives an injunction to his brewer not to put any hops or brimstone into the ale. This crusade against hops seems not long to have survived the King. In the reign of Edward VI., in the year 1552, the term *hop-grounds* made its appearance for the first time in English law; and, a few years later, the merits of hops were so well appreciated that Reynolde Scot says: "If your ale may endure a *fortnight*, your beere, through the benefit of the hoppe, shall continue a *month*, and what grace it yieldeth to the taste all men may judge who have *sense in their mouths*."

In his fondness for malt liquor the Englishman of to-day does not belie his ancestors, but appears fully a match for them, whether Britons, Saxons, or Northmen. Upwards of sixty millions a year, — a sum approximating to the amount annually levied by taxation, — being expended by him on this truly national beverage. Strange to say, however, its consumption is attended with a curious anomaly. Less than one half of it is drunk in perfection, or in its best condition, the larger portion becoming more or less flat, hard, and unpalatable, or even sour before it is consumed. From the day of the tapping of the cask, with the gradual entrance of atmospheric air, the liquor undergoes progressive deterioration, first becoming flat and unpalatable, from the loss of its carbonic acid, and then sour, from having its spirit converted into acetic acid by the absorption of oxygen. In fact, day by day, as the palate unpleasantly detects, it may be said to advance one step further on the road to vinegar.

Spring water, the drink provided for man and animals by nature, is always found impregnated with carbonic acid, and it is to this gas it owes its freshness, briskness, agreeable taste, and doubtless an increased suitability for aiding the process of digestion. The precise nature of the assistance contributed by carbonic acid towards this function we are unable to define; but the instinct which finds it grateful vouches for its utility, and its refreshing and invigorating properties in the case of a jaded stomach are so palpable, as to leave no doubt of its power of influencing the functions of this organ beneficially. Beer or ale, then, which has become stale and flat from the loss of its carbonic acid, is deteriorated no less in its dietetic than in its palatable qualities, — a fact confirmed by the circumstance that many who drink bottled ale with a relish, and find it agree with them, can scarcely venture to take draught ale without suffering from headache. In cases of renal disease, also, the condemnation of malt liquor as a beverage applies with twofold force to its consumption in draught, its injurious tendency in such cases being greatly mitigated, if not removed, by taking it only when charged with carbonic acid so as to be in an effervescing state. The palate, however, pronounces so decidedly in favor of ale that is fresh and brisk with carbonic acid, compared with that which is vapid and flat from the absence of this gas, that no better guide than *taste* need be desired, a fact sufficiently evinced by the large consumption of bottled ale and beer by the public, at a cost of more than double that of the same liquors in draught.

The present price of Bass's or Allsopp's pale ale in wood is 33*s.* per kilderkin (18 gallons), being 1*s.* 10*d.* per gallon; the same quantity of ale in bottle (reputed pints, at 4*s.* 3*d.*) costs 76*s.* 6*d.*, being 4*s.* 3*d.* per gallon, or 2¼ the price in wood. Those, then, who desire to drink their ale aerated with carbonic acid or effervescing, must add to 1*s.* 10*d.* per gallon, the cost in wood, an additional 2*s.* 5*d.*; and hence it happens that, in spite of the unequivocal verdict of taste, bottled ale is only *habitually* consumed by the wealthier classes, the great bulk of the people being debarred by motives of economy from taking it, except as an occasional luxury. The public at large not being able to afford to drink the kind they would prefer, fluctuate as an alternative between two evils; — either, on the one hand, they have a small cask of beer, with the result of drinking it fresh and good the first week (or fortnight, according to its quality and the weather), passable the second, and flat and hard the third, with a residue of five per cent so sour as to be obliged to be thrown away; or, tired or sour beer, they have recourse to the notoriously adulterated mixture of the retailer, and knowingly barter the purity of their liquor for the higher average of freshness and palatability obtained by his more rapid consumption.

Such is the present position of the British public with regard to their national beverage, but such it will remain no longer. An exceedingly simple apparatus has just been invented, by means of which ale on draught may be impregnated with any desired amount of carbonic acid, thus acquiring the sparkling character and valuable dietetic properties of bottled ale, with a decidedly superior flavor, for the carbonic acid, not being produced at the expense of the saccharine matter of the liquor, as in the case of bottled ale, the drink does not undergo that impoverishment or attenuation which, to the palate of many, forms a great drawback to the use of bottled malt liquor. If, as we are assured, draught ale can be aerated in the manner described, and a beverage produced which is universally preferred to bottled ale, at one tenth the additional cost of the latter, we hope to see the benefit conferred by the invention brought within the reach of all members of the community, and the poorest classes enabled to drink whatever malt liquor they can afford sparkling and effervescing with carbonic acid in its highest state of perfection.

IN THE MONT CENIS TUNNEL.

THROUGH the fertile vine hills and over the broad, extended plains of Burgundy — by Dijon, Maçon, Culoz, Chambery, and Aix, winding gracefully

around, and suddenly darting into and out of tunnels on the borders of the lovely, lonely lake of Bourgy, and then along the banks of the Arc — the railway train, in its progress from Paris toward Turin, finally arrives at the little Savoyard village of St. Michel. Here the railway terminates; and, consigned to the very untender mercies of the shaky diligence, the traveller, after a drive of twenty-five miles through the barren valley, reaches Lans-le-Bourg, at the foot of Mont Cenis; and crossing this to Susa, there again takes rail, and on to Turin. In a little more than four years hence, if no unforeseen event occur, this route will be materially changed, and voyagers giving St. Michel, with its dingy houses and bad dinners, the go-by, and continuing in the railway wagon up the banks of the Arc, will take a turn at Modane, ten miles up the valley, and instead of scaling the Alps, will go rushing through their stony heart.

The Arc, rising in the Alps near Mont Cenis, pours down the valley which bears its name, and empties into the Isere, near Chamouset. Near the little hamlet of Fourneaux, eight miles from St. Michel, the river makes a bend in a southerly direction. Upon the opposite side of the Alps, in the valley watered by the Dora-Ripeira, the Dora very accommodatingly also makes a bend towards the north; and thus, at these two points, the valleys of the Dora and the Arc, make the nearest approach to each other in all their course. Here, in these two secluded little nooks, they seem to have had a fancy for making each other's acquaintance, and each here made advances as far as not merely propriety, but Nature herself permitted. But the rugged, frowning, unsympathetic Alps stood sentinel and barrier between them, and roughly rejecting their cooing and wooing, turned them off again in different directions, each to pursue its own course toward the mighty sea. This barrier, skill, science, enterprise, and determination are rapidly breaking down, and before many years shall have passed, we may reasonably hope that the Dora and the Arc, though not indeed permitted to mingle their waters together in joy, will be firmly and forever united in the bands of iron.

It was owing to this proximity of the two valleys at those points, that Fourneaux upon the French, and Bardonêche upon the Italian side, were selected as the entrances and termini of the great Alpine tunnel. It was found that a straight line between them and through the Alps would measure 12,220 metres, or 13,577 yards, about seven and seven tenths miles. Forneaux and Bardonêche were also happily situated for a convenient junction with the railways already constructed, and the geological character of the mountain itself was found to be a favorable one for penetration.

It was not until some years after it was decided that the tunnel should be excavated that the work was actually commenced. In and out of the Italian Parliament, by scientific men, professors, and laymen, all sorts of objections were made to its practicability, all kinds of horrible possibilities were imagined, as obstacles in its way. Rock might be struck of so impenetrable a nature that the keenest-tempered instruments would be battered and turned aside without making upon it the slightest impression; so hard, that charges of powder, no matter how heavy would be blown from it, as they would from the mouth of a cannon, without detaching or even shivering the surrounding mass. Immense subterranean caverns and yawning chasms, and abysses reaching down to Hades itself, might be encountered. Large lakes might be unbosomed, and rivers might come pouring through fissures in the rock; and not only drown all the workmen, but, rushing through the tunnel on either side, overwhelm the valleys of the Dora and the Arc. Fire itself might be encountered, and the workmen suffocated with poisonous gases. These were some of the imagined and imaginary difficulties in the way of the commencement and completion of the enterprise; but there were others of a much more practical, and therefore formidable nature to be overcome.

The usual mode of making tunnels is by sinking vertical shafts or wells at convenient distances, and working through from one to the other. Here, however, that would have been utterly impracticable. It was found that at a distance of 722 yards from the mouth, a well must have been 1,000 feet in depth; at 3,000 yards, 3,593 feet; and at 6,333 yards, nearly half the length of the tunnel, a vertical shaft must have been 5,400 feet deep, — a well which by the ordinary processes would require nearly forty years to dig. In case the shafts were made oblique, instead of vertical, they would have been almost as long as the tunnel itself. There was then but one way to open this, and that was by attacking it at the two ends, — the mountain at its two opposite bases. But here arose another difficulty. How were laborers to be supplied with air at a distance of more than three miles in the very bowels of the earth? In tunnelling by hand, fifty or sixty years would have passed away before the completion of this work, and some more rapid process must be applied. Steam, the ordinary motive power, requires fire to generate it, and fire feeds upon air. It was evident that this could not be made use of, and that a new motive power must be applied. A happy combination of circumstances led to this result.

An English engineer, named Bartlett, had invented a perforating apparatus which, being set in motion by steam-power, drove a drill like a battering-ram against the face of the rock, in time making a hole deep and large enough to be charged with powder. Three Italian engineers, Messrs. Sommellier, Grandis, and Grattoni, were at about the same time experimenting upon compressed air as a motive power, with the immediate object of applying it to the propulsion of railway trains up a steep incline in the Apennines. It occurred to these gentlemen that, could a combination be made of their motive power and Bartlett's apparatus, the result would be precisely the machine for boring a tunnel through the Alps. The motive power would cost nothing, and instead of consuming air, would supply it to the workmen. Years of labor and of thought were expended in contriving, combining, and experimenting; and the result has been the perforating machine, moved by common air compressed to one sixth its natural bulk, and consequently when set free exercising an expansive force equal to that of six atmospheres, which are now working their way through the Alps at the rate of three yards a day. The work was commenced by hand at Bardonêche in 1857, and continued till 1861, when the perforators were introduced, after about 900 yards had been accomplished. It was not, however, until 1863 that the perforators entered upon the French side, the intermediate time having been occupied in erecting dwellings for the workmen, machine-shops, all the appliances necessary for such an immense undertaking.

Provided with a "permit" to visit the tunnel and inspect the air-compressing machinery, I arrived at Fourneaux on the afternoon of the 19th October, the permission being available for the following day. Formerly all visitors who presented themselves were freely admitted, but as the tunnel advanced farther and farther in its progress through the mountain, the danger attending the entrance of strangers, and the annoyance thereby caused to the workmen, rendered it necessary that some more strict rule should be adopted. At present permissions are granted but for the fifth and twentieth of each month, and then only upon application to the "Direzione Tecnica del traforo delle Alpi," at Turin.

Fourneaux, on the high road from St. Michel to Lans-le-Bourg, and about eight miles from the former, I found a miserable little village in a narrow part of the valley, built partly on the river bank, but principally upon the hillside. Nature here, wild and rugged as it is, is grandly beautiful. The Grand Vallon, beneath whose summit the tunnel is to run, raises its lofty snow-bonneted head 11,000 feet above the level of the sea into the sky. By the side of it is Charmey, its summit now also crowned with a recent fall of snow, which has whitened the branches of the mountain firs growing up to the very top. Down the mountain reach the firs and pines, darkly, almost blackly, green. Mingled with them are less hardy trees, their leaves ruddy with the hues of autumn; and fruit-covered barberry bushes, which give a rich variegated color to the hillside.

All around are piled up the Alps, rising one above the other; and at either extremity of vision, looking up or down the valley, it seems shut in by these eternal mountains. It was nearly dark, and the lengthening shadows were rapidly crawling up the mountain side, and departing sunlight was tinging the summits with that rich creamy hue which dying daylight impresses upon snow. I had but time to take a general view of Fourneaux and its surroundings when darkness, which sets in early in these valleys, came down and shut it out. A better dinner than I supposed could be obtained in the uninviting little auberge in which I had installed myself, and a bottle of tolerable Savoy wine, prepared me for a night of rest; and the mountain torrent of Charmey which came tumbling directly beneath my window, soon lulled me to sleep with its rude, monotonous music.

The "Mont Cenis" tunnel, as this is usually called, is an egregious misnomer, Mont Cenis being distant at least sixteen miles from the French, and twenty from the Italian entrance. The line of the tunnel passes beneath three peaks, respectively called the "Col Frejus," the "Grand Vallon," and the "Col de la Roue," the first being upon the French and the latter upon the Italian slope, and the Grand Vallon at nearly an equal distance between the two. Mont Cenis, being the best known of any of the range in this vicinity, will doubtless continue to carry off the honors. In behalf, however, of modest merit, which, the poet says, "seeks the shade" (and if this be true, the Col Frejus should possess an immense deal of that valuable quality, as it has certainly sought out about the "shadiest" position in the entire valley), I desire to put upon record its claim against the recognized one of its loftier and more aspiring neighbor.

The first visit we made in the morning was to the air-compressing establishment, situated half a mile from the mouth of the tunnel, and on the banks of the Arc. Without diagrams, and even with them, the unscientific reader would fail fully to comprehend the structure and action of the powerful and delicate machinery here employed. Twenty iron pipes or tubes, giving the *ensemble* the appearance of a huge organ, stand upright at a height of thirty feet in the air; in these, by an oscillating motion, caused by the rise and fall of water, common air is compressed to one sixth its natural bulk. This rise and fall is caused by a series of pistons working in the tubes. As the piston ascends, it pushes the water before it, and this in turn compresses the air, and chases it into a reservoir. As it descends, a valve near the top is opened, through which the common air rushes to supply the vacuum, and this in turn is compressed and pushed into the reservoir. The pistons are worked by water-wheels; and thus one force which costs nothing is made to manufacture from the surrounding atmosphere a power which is now boring through the hardest rock.

From the reservoir an iron pipe eight inches in diameter, in sections eight feet in length, the joints being rendered air-tight by cushions of caoutchouc, and laid upon the tops of stone posts, conveys the compressed air along the roadside till nearly opposite the mouth of the tunnel, where, taking a sharp turn, it follows a steep incline, upon which a double-track railway is laid, up to the entrance. We followed the course of the pipe up this incline, upon which the "kangaroo wagons" (so called on account of their peculiar construction, the two front wheels being made lower than the hind ones, giving the wagon the appearance of a kangaroo) were mounting, heavily laden with stone, cut for the mason-work of the tunnel. Four hundred and fifty-eight steep stone steps brought us up on a large artificial plateau, formed by the *débris* brought from out the excavation and shot down the mountain-side.

Nothing seemed so surprising, and nothing could be so likely to astonish the general observer, as the fact that the mouth of the tunnel is at a distance of 105 metres, or 340 feet above the level of the valley. The reason, however, is evident enough when the facts of the case are known. The two opposite valleys of the Arc and the Dora differ in their heights above the level of the sea, the former being at an elevation of 1,202 metres and a fraction, while the latter has an elevation of 1,335. A line, therefore, run straight from the base of the mountain on the Bardonêche, or most elevated side, would emerge upon the Fourneaux side at a distance of 132 metres above the valley. This difference is to be compensated for, and it is done by commencing the tunnel on this side at an elevation of 105 metres, and giving a much steeper grade from the north end to the centre than from the other, the grade in the one case being 0.022 to the metre, and in the other but 0.0005.

Arrived at the entrance, I delivered my letter to Signore Genesio, the director of the workmen, who invited me into his bureau, where he called my attention to a caoutchouc coat reaching nearly to the heels, and which he recommended me to put on. We then went to the mouth of the tunnel, where, each receiving from the custodian a lighted lamp, attached to a wire about eighteen inches in length, we commenced our journey into "the bowels of the earth."

The entrance does not materially differ in appearance from that of ordinary railway tunnels. It is here built up and faced with solid masonry, and is

twenty-five feet three and a half inches wide at the base, twenty-six feet two and three quarters inches at the broadest part, and twenty-four feet seven inches high. A double railway track emerges from the mouth, and wagons loaded with *débris* were coming out; and others, filled with cut stones for the masonwork, drills, and other working utensils, going in. As we entered, the only light we could see ahead was a gas jet blazing in the distance.

Along either side of the tunnel there is a *trottoir* of flagstones, upon which we walked, lighting a path for our feet with the lamp which hung near them. The air-conduit is ranged along the side of the gallery, while in the middle of the tunnel, between the two lines of rails, a canal has been dug, through which the gas and water pipes are conveyed to the end of the gallery. This canal is wide and deep enough to afford a refuge for the workmen and a means of exit in case the tunnel should be filled by a fall of the crumbling rock above. The masonry on either side was damp, and in many places little streams came trickling through it, and it occurred to me that in time this constant percolation must inevitably wear away the cement which binds the blocks of stone together, and undermine the vault. Overhead, the masonry is not visible, nothing being seen but a wooden partition, dividing the tunnel into two equal galleries above and below. The object of this, which is only temporary, is to create a current, the rarefied air from the lower gallery rising and rushing out through the upper, while fresh air comes into the lower one to supply its place. As yet this partition extends only a short distance, and is not of much practical value.

We passed the gas jet, and looking before us, saw nothing but the most impenetrable darkness; and looking behind, I observed the entrance gradually growing smaller, until after I had continually turned and watched it till it had dwindled down to the apparent size of an apple, it suddenly dropped out of sight, as the sun sinks below the horizon in a calm summer sea. Peering then in either direction, I saw only impenetrable darkness. I use the word "saw" advisedly, for this darkness here in the bowels of the earth seemed to be palpable and ponderable, — something more than what the philosophers define as a mere absence of light, — something heavier and more solid than a negative, — a real positive entity, which it seemed to me I could feel pressing against and around me, as, guided by the flaring flame of our lamps, we forced our way through it. Upon inquiring of my guide how far we had reached, he called my attention to a little notch in the wall, where the distance was marked 1,000 metres, or about two thirds of a mile.

A dull rumbling sound attracted my attention; and in the distance, and seeming miles away, lights were dancing up and down in the murky air, as the *feu follet*, or wildfire, dances and flits in summer evenings over marshes, bogs, and fens. These were the lamps carried by some workmen going out, and a wagon loaded with *débris* soon came rolling by us. Up to this time I had experienced no particular difficulty in breathing, — a sensation only that the air was unnatural and dank, like that in a cellar. As we advanced, however, it began to grow hot and stifling, and we entered a thick yellow fog, redolent of the fumes of gunpowder, — which, indeed, it was, seeking its way towards the mouth of the tunnel. This was very disagreeable, almost suffocating, producing a sensation of heaviness upon the brain, a dull headache, and a fearful feeling of dread. As we walked on we saw lights again, dancing like fireflies in the distance, and soon a party of rough, half-naked, smoke-begrimed men, who loomed up in the fog like enormous giants as they approached, passed us on their way from work.

At a distance of 1,670 yards, or nearly a mile from the entrance, we came upon a little cabin, or barrack, built upon one side, and here my guide informed me that the completed portion of the tunnel ended. Entering the cabin, and following his advice and example, I gladly removed coat and vest, covering myself again with the caoutchouc; and, picking and trimming our lamps, we darted again into the darkness. Up to this time it had been plain sailing, walking along with as little difficulty or obstacle as on a sidewalk in a deserted street. Upon quitting this, however, we entered the gallery *in corso di scavazione*, that portion of the tunnel which, having been opened by the perforating machines, was now being enlarged by the ordinary hand process. Here there was no longer any *trottoir*, and, picking our way over piles of rocks, which looked as though they had been thrown in confusion by giants at play, dodging wagons passing in and out, passing groups of swarthy workmen, through an atmosphere yellow, thick, and stifling, we at length came upon a group of men standing quietly as if awaiting something, in front of a heavy oaken door, which closed the passage in advance of us. My guide said we must stop here for the present. I imagined the cause, and selecting the softest, smoothest-looking rock, sat down and meditated.

Here was I, more than a mile from the mouth of the tunnel, with a mile of Alps piled above my head. The gallery was not more than ten feet wide and seven high, and its roof and sides were of jagged, sharp, protruding rocks, seeming to need but a slight shaking to send them tumbling down about our ears. Suppose they should tumble, and we be all buried alive in this hole in the earth! Suppose some of the predicted rivers or possible lakes should find their way through some aperture just opened, and engulf us now! Suppose the air-pipe should burst, or, worse still, the supply of air be stopped, and we all suffocated! Suppose ——, but the thread of my rapidly-crowding hypotheses was broken by a sudden sound which might well, under all the circumstances, have appalled a braver and more firmly constituted man, and which for an instant made me believe that one of my suppositions was about to become a reality. Bang! — but not the sharp cracking "bang" of a heated cannon, or the sound of a rock-blast in the open air, — a dead, dull, rumbling explosion, which reverberated through the gallery, and seemed to give the whole earth a shake. I started, and involuntarily looked up, as if expecting to see the stony roof give way and tumble. Bang! bang! bang! in rapid succession five or six other blasts were blown; the oaken doors were opened, a huge gust of thick yellow smoke and stifling black gunpowder came rushing toward us, when my guide touched me on the shoulder and said we could now proceed. I uttered an inward "thank God!" that I was really safe, and speedily sprang up and joined him.

Passing beyond the heavy oaken doors, still carefully picking our way over the stones through the gallery, growing lower and narrower at every step, through the smoke we soon discovered a brilliant blaze of gas, and heard a sharp hissing sound. Suddenly we emerged from the heat and smoke, and were breathing an air fresh, sweet, exhilarating, and

doubly grateful to the lungs after the deteriorated material upon which they had been feeding. We were in the "advanced gallery" at the end of the tunnel, and before us was the *affusto*, bearing its nine perforators, persistently striking and boring their way into the solid rock, scattering around them sparks of fire struck off at every blow.

The gallery here is not quite nine feet in width, and but eight and a half in height. The *affusto*, as the huge structure is called upon which the perforating machines are borne, and which bears precisely the same relation to them that the carriage does to the gun, nearly fills up the entire space. In order to observe the action of the machinery, we were obliged to coast carefully along the side of this heavy wagon, and when arrived at the front, to wedge ourselves between it and the rock, with just space enough to stand in.

Here the sights and sounds really became cheerful and pleasant. The gallery is brilliantly lighted; the compressed air, a jet of which is constantly escaping from the conduit pipe, is fresh, cool, and grateful to the wearied lungs; the constant rapid "thud" of the drill as it strikes the rock; the hissing sound of the escaping air; the cries of the workmen to each other, sounding unnaturally loud in this pure air and confined space, all constituted a scene as exciting as it was strange. A feeling of manly pride, at the sight and action of these wonderful machines, in the operation of which the powers of nature are made the slaves of man, seems to invade the soul. We forget that we are more than a mile from daylight, and that four thousand feet of Alps are weighing above our heads. We forget danger and banish fear; and the workmen, thirty-nine of whom are employed upon each *affusto*, seem to have no idea of either. They perform their labor in this little hole, with a remarkable sense of security. They seem to play with these huge machines,—they put their hands upon and direct the steel bar which strikes the rock, and the powerful instrument which pierces the Alps glides between their fingers like a child's toy. They hop about like toads between the drills, perch themselves upon and under the various parts of the monster machine, and never seem to dream that at any moment, some unknown, unlooked-for fissure in the rock may be discovered, and they crushed to atoms by the tumbling mass; or that this powerful agent, which they have made their slave, with its explosive force of six atmospheres, may some time burst its iron fetters, and scatter death and destruction around it.

Each perforator, nine of which are at work, is entirely independent of every other, so that, when one is placed *hors de combat*, its inability to act does not affect the rest. It is much easier to describe the operation of the perforator and its effect than the complicated machinery by which it is set in motion. The motive power is conveyed to it from the conduit by a flexible pipe, which throws the compressed air into a cylinder placed horizontally along the *affusto*. In this cylinder a piston works back and forth, and to this piston is attached a *fleuret* or drill, about three feet long, finely tempered and sharpened at the end. As the piston moves up and down, it of course drives the drill against the rock, and interdraws it, and by a very delicate and complicated piece of machinery a rotatory motion, similar to that in hand-labor, is given to the drill itself. We arrived in the "advanced gallery" at a very favorable moment, just as a new attack was about being commenced by a perforator.

A drill was attached by a flexible joint to the piston-rod; a workman standing upon the front end of the machine, held and directed this, as a gardener would the hose of a common garden-engine; the compressed air was turned on by another workman, at the hind end of the *affusto*, and the drill commenced its rapid and heavy blows upon its formidable foe. "Thud!" "thud!" "thud!" it goes, at the rate of two hundred times a minute. Two men mind this portion of the apparatus, one to give the general direction of the drill, and the other, standing upon the ground, holds the end where it strikes the rock with a crooked iron, to prevent it from flying off from the desired point of attack. The force of each stroke of the bar, is 90 kilogrammes, or 198 English pounds, and as the piston moves back and forth, and consequently causes the bar to strike the rock at the rate of from 180 to 200 times a minute, each drill, therefore, exercises upon the point of attack, a force equivalent to 39,600 pounds a minute.

The rock upon which the perforators were at work when we entered was hard white quartz, the most difficult to pierce which has yet been encountered. This layer was struck in the middle of June last, and its presence has materially retarded the progress of the tunnel. Formerly, in the mica, hornblende, slate, and limestone, through which they quarried, the perforators made an advance of from one and a half to three yards a day. In this quartz, they now make but from eighteen to thirty inches. A few figures will exhibit the rapid and decided reduction in the rate of progress. In May last, the advance was 91 metres; in June, when the first croppings of the quartz began to appear, it was reduced to 49½; in July, to 16; in August, to 13; and in September, to 19½ metres. It is supposed that there still remains a year's work in this quartz.

In commencing a perforation, the first difficulty is making a hole sufficiently large to confine the drill. When this first strikes the rock it hits wide and wild, like a pugilist blinded by the blows of his adversary. When once fairly entered, however, it works back and forth and rotates with great precision and regularity, a stream of water being conveyed into the hole by a flexible pipe to facilitate the boring. The nine perforators are placed above, below, in the centre, and on the sides of the *affusto*, so as to attack the rock at different points and angles, upon a surface of seven square metres. About eighty holes in the ordinary rock, from thirty to forty inches in depth, and varying in diameter from an inch and a half to three inches, are thus bored in preparation for blasting. In the quartz, however, in which the boring is now in progress, the holes are made but from seven inches to a foot in depth. Eight hours is usually employed in the boring, and this being completed, the *affusto* is drawn back, and a new set of workmen, the miners, take possession of the gallery. The holes are charged with powder and tamped, the miners retire behind the oaken doors, the slow match is ignited, an explosion occurs, which sends its reverberating echoes to the very extremity of the tunnel; the rock blown out is cleared away, the *affusto* is advanced again, and another set of workmen coming in, the perforators are set in motion.

And so this continues year in and out, week days and Sundays, night and day. The thousand workmen employed upon either side are divided into three reliefs, each working eight hours and resting

sixteen. But two days in the year, Easter Sunday and Christmas, are acknowledged holidays. And for this constant, difficult, and dangerous subterranean labor, accompanied with an oppressive heat and a poisonous atmosphere, with smoke and grime and dirt, the common laborers receive but three francs a day, the more important and experienced ones four and five.

The quartz rock is terribly destructive to the drills and machines, and the former are required to be changed every few minutes, the tempered ends being battered and dulled after a few hundred strokes against the rock. In the comparatively soft material through which they have been passing there has been an average of a hundred and fifty drills and two perforators placed *hors de combat* for each metre of advance; and M. Sommellier estimates the number of perforating machines which will succumb in the attack, before the final victory is gained, at no less than two thousand.

My guide and myself had now been wedged in between the *affusto* and the rock for more than half an hour, and having seen and heard sufficiently, I proposed to leave; and taking our lamps, we commenced our "progress" backward. On our passage through the gallery of excavation we were frequently stopped by wagons standing on the rail track, which were receiving loads of stone, let fall into them through traps cut in the partition previously mentioned, and which divides the tunnel into two galleries. I had a curiosity to mount into this upper gallery; and climbing a steep staircase cut in the rock, we soon entered it. Here was another strange sight: an immense stone chamber, with walls and roof of jagged stone, through which little streams of water were percolating, filled with smoke, through which the flickering light of the miners' lamps was dulled and deadened, a hot, fœtid atmosphere, and a hundred black-looking men boring and drilling on every side, the platform covered with loose stones, the *débris* of the blast which we had heard on entering, and from the effects of which we were only protected by this oaken wall. "Are not accidents frequent here?" I asked my guide. "Not very," he replied; and told me that since the beginning of the work but about forty men had been killed by premature explosions, falling of the rock, by being crushed under the wagons, and every other form of accident. The day after I visited the tunnel, upon the very spot where I stood in the "advanced gallery," a premature explosion occurred, caused by a spark struck from the rock while a miner was tamping a charge, resulting in the death of four men and the blinding and serious maiming of six others.

Over and among the stones, and down another steep ladder, and a short walk brought us to the little cabin where we had left our coats. These we were glad to put on again, as the air was already growing colder. In the gallery of excavation the thermometer, summer and winter, ranges from 71° to 84° Fahr., and there is frequently a difference of 40° in the temperature of the interior and exterior of the tunnel. Over the *trottoir* we rapidly retraced our steps towards the entrance. This soon appeared in sight, and growing larger and larger, we soon reached it, and emerged once more safe and sound into God's fresh pure air, and saw before us and around us again the snow-crowned, fir-girdled Alps towering above the valley of the Arc.

We had been nearly two hours "in the bowels of the earth," and the place where we had stood by the side of the *affusto* was 2,170 metres, or 2,372 yards — nearly a mile and a half — from the entrance. Up to the end of September last the advance made upon the Italian side was 2,914 metres and 20 centimetres; that upon the French, 2,154 metres and 80 centimetres. After passing through the quartz in which they are now engaged the engineers expect to strike a layer of gypsum, through which the perforators will make an advance of three metres a day. On the first of January, 1866, the tunnel on the Bardonêche side had reached a length of 3,110 metres, on the French, 2,200, making in all 5,310 metres, leaving 6,910 metres, or 7,228 yards, yet to be completed. This the geologists and engineers confidently predict, unless some unforeseen obstacle occurs, can be done in four years, and that the tunnel will be opened from end to end by the first of January, 1870.

Yet there are not a few old croakers, who still believe that the "unforeseen obstacles" will yet be encountered, and bar the way of the perforator and *affusto;* that harder rock may yet be struck; that the subterranean caverns, and yawning chasms, and abysses may stretch beneath the very summit of the Grand Vallon; that the rivers and lakes may yet burst forth and overwhelm and engulf workmen, tunnel, and the valleys in which its either end *debouches.* In reply to all this, however, the geologists and engineers calmly assert, that thus far, their "diagnosis," if I may use the term, of the character of the mountain chain, beneath which the tunnel runs, has proved correct, and that they have no reason to believe it will not continue so to the end.

Let us hope that they are right, and the croakers all wrong, and that within the time predicted, on some fine morning, the miners upon either side may hear the steady, rapid "thud" of the drill, as it strikes upon the then only thin wall, upon the other; and that the *affusto* having been withdrawn, and the mine fired, when the smoke of the explosion shall have cleared away, the laborers from Fourneaux and Bardonêche, climbing over the *débris,* may meet and shake their rough hands together, and mingle their rude voices in a shout of joy, that their work is finished, and that there are no more Alps.

THE WRECK OF THE "MYSORE."

It is an old story now, and every year brings new shipwrecks and disasters at sea, yet the sad tale of the wreck of the "Mysore" may interest some readers. I have before me the manuscript journal of one of the few survivors. It is too long to give entire, but I gather from it the leading incidents of the following narrative.

The "Mysore" was a vessel of 800 tons burden trading between China and Calcutta. My relative, Captain W——, was her second officer, and he, along with seven Lascars, was saved out of a crew of one hundred men when she went down in a hurricane in the Chinese Sea. After being exposed for thirteen days in an open boat to the inclemency of a tropical monsoon, without food or a compass to guide them, and after being driven about for 600 miles, they were safely landed at a Malay town in the Gulf of Siam, where they were kindly treated by the Rajah, who sent them on, when recruited, to Malacca in one of his own war-prows.

The "Mysore," being laden with a cargo of soft sugar at Whampoa, set sail for India on the 30th of November, 1818. A week after, she was overtaken

by heavy squalls, and was found to be making much water. The morning of Monday, 7th December, found them in the midst of a perfect hurricane, their sails torn into ribbons, three feet of water in the hold, — for the ship had been leaky when leaving the port, — the attention of both officers and men being engrossed with the pumps, in the vain endeavor to prevent the sea gaining on them. After a fearful day, during which "both quarter-boats, main and mizen topmasts, gaff, and all the topsail yards were swept away, and the vessel was nearly full of water, the lower deck afloat and lying over with the starboard chains in the sea," the wind fell about 9 P. M., and the moon made her appearance. Orders were given to clear away the remaining boats, the pinnace and long-boat being alone left. In an hour, the former, furnished with ten oars, three lug-sails, jib, an anchor and cable, a water-bucket, an axe and musket, was ready to be hoisted out. She was intrusted to the second and fourth officers, with directions to keep her under the ship's lee while the long-boat was got out. While the pinnace was being lowered, she was struck on the side by a belaying-pin, which unfortunately stove in two planks; she consequently made a good deal of water, on finding which the fourth officer and several of the crew scrambled on board the "Mysore" again, leaving the others to their fate. Heavy weather again set in, and those remaining in the pinnace had difficulty in keeping her so near the ship as they wished. All hands on board were meanwhile busied in endeavoring to get out the long-boat. "When they had her up as high as the gunwale, something gave way; we (in the pinnace) could not exactly see what, it being dark, but we supposed it to be one of the tackles, and the boat afterwards fell down on the deck. It was now about midnight: a heavy squall came on, which blew us to leeward of the ship. However, in about half an hour afterwards we could see the long-boat again above the gunwale and seemingly outside the ship, and heard the carpenters called for several times, I suppose for the plugs of the scuppers in the boat's bottom." Just at this point the party in the pinnace heard the captain's voice hailing them to pull hard to the ship, which now seemed settling very fast; but in a few minutes she made two or three very heavy plunges, and then with her freight of living souls disappeared, having, it is supposed, parted in halves about the fore hatchway, with a tremendous crash. The survivors in the pinnace pulled with all their might towards the dreadful scene; but by this time the moon had gone down, and not a single soul could be seen.

"Sometimes a broken yard or mast would come across us to endanger our boat, which we avoided as much as possible; still hearing cries on all sides, and endeavoring all in our power to reach the place whence they proceeded, but in vain, the swell and wind being too powerful for our feeble efforts, having been completely worn out for the last few days."

After four hours' ineffectual attempts to pick up any of their shipmates, the party had to abandon all hope of ever again seeing any of them.

The pinnace by this time was half full of water, which they baled out, stopping the hole as best they could with one of the Lascar's blankets. Having appointed one of their number to sit by the leak, and continue the work of baling, the rest resigned themselves to sleep, of which they had had none for two nights.

At daybreak they could see no vestige of the "Mysore," and found themselves in a pitiable plight, having no food on board, no chart, no compass. The second officer, now, alas! the sole survivor of those who had had command in the ship, and whom, in the remainder of our narrative we shall designate the "captain," committed himself to the care of Him who rules the winds and waves, and set himself heartily to the task of guiding his frail bark as best he could.

Having cut up one of the thwarts, and fitted a piece of it into the hole on the boat's side, they succeeded in stopping up the leak which had threatened to prove so troublesome. They then put on as much sail as she could safely carry, and at length came in sight of some islands, on which, however, they could not for some time effect a landing, in consequence of the surf. When they did land on one, they found nothing to eat but the heart of bamboo, and some soft roots, but they got their bucket filled with fresh water.

Five days after they had been separated from the wreck, one of the Lascars was seen sitting in the bows, with his back turned, munching something. This was found, on examination, to be some biscuits, and brown sugar, which he had brought with him, and which on being produced in the corner of his handkerchief, had turned to pap with the salt water. It was, however, shared among them, each getting a dessert-spoonful, their first breakfast for many a day.

For days they continued enduring dreadful hardships from hunger, thirst, and exposure to the weather, not to think of the dangers which they ran from the violence of the squalls, which from time to time threatened to engulf their pinnace.

The writer of the journal then describes trial from another quarter. "I now thought we had gone too far to the west, and were in the Gulf of Siam. Hauled up to the eastward to make the Straits of Singapore. The crew, upon seeing this, were much dissatisfied, and insisted on still keeping to the southwest. All my persuasion would not do: they said we could never make the land in that manner, and persisted on keeping before the wind. So we again bore up to the southwest. Having very unfavorable weather, with heavy rains and calms, my feelings were much hurt at the behavior of the Lascars, as I thought we had done very well, and were in a fair way to make the straits; but now to be led away by these ignorant people to a country with which none of us were acquainted, completely stupefied me; in short, I let go the tiller, and told them to steer their own course, resigning myself to the will of Providence. In this way we sailed for two days."

Bodily weakness had deprived them of the services of some of the crew, and those who were still enabled to keep up were so exhausted and emaciated as to feel that a few days longer must inevitably see them, too, in the position of three of the Lascars, who lay prostrate in the bottom of the boat, crying out, "Ma, bap, khana ne: mwyaga!" (Mother, father, no food: we shall die!)

But, in singular illustration of the oft-repeated truth, "Man's extremity is God's opportunity," the morning of Sunday, 20th December, found them alongside of a shore, on which they descried plenty of cocoanut-trees, some houses built in the English fashion, and every appearance of a large town. Having with difficulty effected a landing, they were welcomed by the Rajah and his attendants, who conducted them to a place of shelter, supplying them with eatables, which they felt to be the sweetest

meal they had ever eaten, having been now thirteen days at sea in their open boat, not to mention the days of tempestuous weather which they encountered before their vessel was wrecked, and on which they had no cooking of provisions on board.

Tringany was the name of the place where they had thus landed. It was governed by an elder and younger Rajah, the former giving himself no trouble with public affairs, the whole management of which devolved on the latter. There were about one hundred junks belonging to the port, all laid up for the winter. A considerable amount of trade was carried on with Cochin-China, Siam, Batavia, Malacca, and other parts, in gold dust, pepper, sago, rice, coffee, and betelnut, as exports; while the imports were iron, cloth, guns, etc. In fishing, the natives did not go out in boats, but used nets, walking in the surf up to their neck. The captain amused himself as best he could, in fishing and hunting. One evening, being bright moonlight, he tells us, he was indulged with a sight of the whole of the Rajah's seraglio, about thirty ladies, taking their customary airing on foot. They seemed much amazed at seeing "the 'ourang pooty,' as they called me, having never seen a white man before."

The captain had his patience much tried with the many vexatious delays which occurred, ere, after recovering from the sad effects of his many privations, he could get under sail again. The Rajah at one time affirmed that it would be highly dangerous to set out to sea for some weeks, on account of the stormy weather they expected at that season. When, again, his scruples were overcome, and a day fixed for embarkation, the Malay seamen who were to accompany the expedition declared that go they would not in so stormy a month. In the course of one interview which the captain had with the head Rajah, he expressed his unwillingness that he should leave the place at all, and asked him to take command of his war-prows, offering him as an inducement the hand of any of the princesses he chose in marriage.

At last a prow was got ready, manned, and provisioned, and, after the writing of as many papers and the procuring of as many signatures and seals as might have cleared out a whole fleet of Indiamen, they got under way on 19th January, 1819. In the course of their voyage they fell in with several vessels, and, on hauling up to speak to one, were saluted with round and grape shot, the captain and officers being evidently alarmed at the appearance of a manned Malay prow, having on board an officer with a white face, and the high-crowned Portuguese black hat he had received from the Rajah. This vessel afterwards proved to belong to the King of Siam, and was commanded by a gentleman from Forfarshire, of the name of Mitchell, with whom the captain ultimately became very intimate at Calcutta.

Towards the afternoon of the 28th January the voyagers sighted the Roads of Malacca, into which, a favorable breeze springing up, they pressed with full sail, and came safely to anchor at two o'clock. Here the captain received much attention from the agents of the owners of the "Mysore," who procured for him and the Lascars a passage to Calcutta in the "Hope," from whose officers they experienced all manner of kindness, reaching their destination after a pleasant voyage.

Our readers may easily conceive what would be the captain's feelings when Calcutta was at length entered by him, as he thought of his many messmates in the "Mysore" swallowed up by the remorseless waves, while he alone, of all his own countrymen, was, after so striking a preservation, brought to "the desired haven." He had experienced a deliverance which might well give a turn to all his future thoughts, and, from the reflections contained in his journal, we believe he was deeply impressed then, and continued to be so, with a sense of what he owed to the merciful providence of God.

THE AUCKLAND ISLES.*

The adventures of Robinson Crusoe have for several generations been read with intense interest by millions, probably, of people in almost every language, and have been the delight of Englishmen in particular from their school-boy days up to the most advanced period of their lives. It is but rarely, however, that we find similar records of such events happening in actual life, for the narrative of Alexander Selkirk, and of his three years' solitary abode on the Island of Juan Fernandez, the commonly supposed origin of Robinson Crusoe, appears to have done little more than suggest the main idea of his story to Defoe, who supplied all the remainder from his own fertile and creative genius. But in Captain Thomas Musgrave's account of his shipwreck on the Auckland Isles, and of the escape of himself and his crew after twenty months' thraldom, we find a description of real occurrences quite as singular and romantic as those related in "Robinson Crusoe," and in many respects far more painful. The whole narrative, indeed, from first to last, bears a striking resemblance to Defoe's story, and, as we read on, we are constantly and forcibly reminded of that wonderful tale. Mr. John Shillinglaw, the author of "Arctic Discovery," and editor of the present volume, which is compiled from the private journals of Captain Musgrave, justly observes, in a brief introductory chapter, that "few more interesting narratives of disasters at sea have ever been given to the world than the journals in which Captain Musgrave records the wreck of the Grafton. A great trial, bravely met and gallantly surmounted, is therein told with a care and exactness which is at the same time singularly modest."

On the 12th of November, 1863, Captain Musgrave sailed from Sydney, New South Wales, in the brig Grafton, bound for the South Sea Islands. She had an extremely rough passage, and encountered very tempestuous weather, with rain, boisterous gales, and an angry sea. After suffering in this way for several weeks, the Grafton was wrecked on the 3d of January, 1864, on the principal island of a group in the Southern Ocean, called the Auckland Isles. These islands were originally discovered by Captain Abraham Bristow, in a merchant vessel, during a whaling expedition, in the month of August, 1806. Captain Bristow named them the Auckland Isles out of compliment to his friend Lord Auckland, and immediately "took formal possession of them for the British Crown." They were subsequently visited at different periods by Sir James Clark Ross and Captain Crozier in the ships Erebus and Terror (which were afterwards lost in the Arctic regions in connection with the ill-fated Franklin expedition), by Mr. Charles Enderby,

* Cast away on the Auckland Isles. A Narrative of the Wreck of the Grafton, and of the Escape of the Crew after Twenty Months' Suffering. From the Private Journals of Captain Thomas Musgrave.

Captain Charles Wilkes, and other enterprising navigators, English and American. They were also colonized for a short time by a small tribe of New Zealanders who had emigrated from their own island, and afterwards by a few Europeans, who opened "The Great Southern Whale Fishery" in the island; but they were soon deserted by both parties, and the chief of the group was quite uninhabited when the Grafton, with Captain Musgrave on board, was wrecked there about two years ago.

During his twenty months' miserable residence on this bleak and dreary spot, Captain Musgrave kept a journal in which he made notes of every important event that happened, and of every adventure that befell him and his companions in misfortune, from the period of their being cast away. A considerable portion of this diary was written in seal's blood, which Captain Musgrave was obliged to use after his ink was gone. The journal does not appear to have been a daily record of events, but circumstances seem to have been chronicled indiscriminately here and there, according as they chanced to happen. We learn that Captain Musgrave and his fellow-sufferers contrived, after many weeks of patient toil and labor, to build themselves a kind of house or hut, formed partly of the sails, yards, &c. of the ship, partly of planks and boards taken from the wreck, and partly of timber cut from trees in the neighboring forests, of which there are several near the spot where they were encamped. Here, again, the narrative bears a striking similitude to "Robinson Crusoe." Indeed, in writing his journal, Captain Musgrave would seem to have occasionally had Defoe's work in his mind. The whole book, as may be supposed, is extremely painful. The writer keenly depicts the scenes of trial and suffering, both bodily and mental, which he endured during his residence on the island, and he sometimes expresses himself in very forcible and affecting language, inspired by the terrible circumstances in which he found himself.

When Captain Musgrave and his companions had at length completed their hut, they roofed it in with thatch made of grass which grew on the island, and afterwards covered the outside with old canvas, which did not, however, by any means exclude the wind. In the interior, they constructed a fireplace of tin, zinc, and copper from the ship, with boards towards the top. The furniture consisted of two or three tables, some benches and stretchers to sleep on, a looking-glass, and a few other articles, all of which were likewise got from the wreck. The construction of this hut was a work of time and difficulty; for, besides having numerous obstacles to contend with in the shape of wet and stormy weather, high winds, scarcity of hands, and occasional sickness among the men, all of whom had caught severe colds from being compelled to lie on the damp ground, Captain Musgrave and his followers were sadly in want of proper tools for their work, their only implements being a hammer, an axe, an adze, and a gimlet. However, Mr. Raynal, the chief mate of the Grafton, who appears to have had a special mechanical genius, turned blacksmith on the present occasion, and manufactured a quantity of nails, thus rendering considerable assistance to his fellow-sufferers in building their hut.

All the time they were compelled to abide on this remote and desolate spot, these unfortunate men had to encounter, in addition to their other hardships, great sufferings from the severity of the weather. Storms of hail, rain, thunder, and lightning, alternated with violent hurricanes; and heavy falls of snow and sleet, together with sharp frosts, were of frequent occurrence. Fine warm days were but rare exceptions to the rule. The stock of ship's provisions, as may be imagined, was soon exhausted, but the party did not suffer for want of food while they remained on the island, although they frequently endured extreme toil, and had to face great dangers and difficulties in endeavoring to obtain the necessary means of subsistence. In the course of their researches, they discovered a root which grew abundantly everywhere, and which they found to be an excellent substitute for both bread and potatoes. It was, especially, an admirable relish with fish, and contained a good deal of saccharine matter, in consequence of which they made a quantity of sugar from it, and gave it the name of *sacchrie*. They likewise manufactured from this prolific root a kind of beer, which they found preferable to cold water, and which they used as a substitute for tea. This beer was made by first grating the root on a large grater, afterwards putting it through the different processes of boiling and fermenting, and, finally, placing it in a cask, from which it was drawn off as it was wanted.

They were soon compelled, however, to leave off drinking this beverage, and to take to water again, as it produced bowel complaint. Their food consisted chiefly of seals dressed in various ways, seagulls, oysters, mussels, and several other kinds of fish; penguins, quails, widgeons, snipes, and other wild-fowl, with which the island abounded. Seals appear to have been the principal article of consumption, and, in killing these animals for food, the mariners used often to have very desperate encounters with them, as, when attacked, they will bravely face their adversaries, and fight long and furiously, in which case the party commencing the assault will seldom escape without damage. It therefore requires great art as well as nerve to overcome these creatures, the best method of killing them being to take them while they are asleep. They are likewise extremely ferocious among themselves; and pitched battles between large numbers of opposing forces, resulting in great slaughter, are no uncommon occurrences. Of the skins of the seals, Captain Musgrave and his fellow-castaways made themselves clothes after a time, using canvas ravellings for thread, and sewing with a sail-needle. They also found on the island a species of bark, which they could tan admirably, and of which they made themselves shoes. While they were on the island, Captain Musgrave and his followers frequently heard the barking of dogs, and discovered the tracks of many of these animals, which they imagined to be sheep-dogs, but they were never able to obtain a sight of one of them. In the course of their travels, however, they found a common domestic cat, and brought her home to their habitation.

On the 27th of June, 1865, Captain Musgrave, Mr. Raynal, and two of the men, succeeded in launching a boat of their own construction, which was made partly of planks saved from the wreck of the Grafton, and partly of timber cut out of the bush; the ballast, sails, &c., being mainly composed of salted seal-skins. In this operation, Mr. Raynal took a very active part. He was largely engaged, not only in making the boat, but likewise in blacksmith's work, having manufactured a great number of implements required for the purpose, as they were terribly short of tools. These were constructed with much mechanical skill, and Mr. Raynal worked

hard, from morning till near midnight. Having stocked the boat with provisions and other necessaries, they set sail in the hope of reaching New Zealand, from which they would endeavor to return, or send for those left behind at Auckland. They reached no farther than Camp Cove, about seven miles distant, the first day. Here they halted, and were afterwards obliged to take the two men who started with them back to the old camp at the wreck, as they could not be induced to proceed any farther. After being detained several days by bad weather, Captain Musgrave and Mr. Raynal again launched their boat, on the 19th of July, and on the 25th of the same month, they landed at Port Adventure, in a very weak and exhausted state, and were kindly received by Captain Cross, of the Flying Scud. They afterwards sailed with him for the island of Invercargill, where they landed on the 27th of July.

Having stated the circumstance of his shipwreck at Auckland to the authorities at Invercargill, a large subscription was immediately got up for Captain Musgrave, and finally a boat, well furnished with clothing, blankets, and other necessaries, was provided to enable him to return to the former island for the men who had been left there. On the 30th of July the boat weighed anchor, and, after an extremely rough passage, and repeated delays owing to great stress of weather, they once more landed at Auckland, on the 24th of August, and "beat up" for their old hut, within a mile of which they met their fellow-castaways. The poor men were in a very reduced condition, being half starved. Captain Musgrave immediately provided them with a hearty and substantial meal, to which they did ample justice, for they had been so pinched for food during the captain's absence that, on one occasion, they were obliged to catch mice and eat them. "Moreover, it appears," says our author, "that they could not agree, and, strange as it may seem, although there were only two of them on the island, they were on the point of separating and living apart!" On the 1st of September, the whole party took their final departure from the Auckland Islands, and on the 14th arrived at Port Adventure, whence Captain Musgrave soon afterwards sailed for Melbourne.

In the course of his wanderings in Auckland, the captain had discovered the dead body of a man having the appearance of a seaman who had died of starvation; and he also found the ruins of some huts, traces of vegetation, and other signs of the island having been inhabited. On arriving at Melbourne, from which port several vessels which had previously sailed were missing, Captain Musgrave waited on the authorities, and, having stated the above facts, offered his services to rescue those persons whom he believed to be still on the island. A steamship was accordingly at once equipped under the command of Captain Norman; and this vessel, being amply supplied with stores, clothing, &c., set sail for Auckland on the 4th of last October, accompanied by Captain Musgrave. However, on arriving at the island, no signs of any human beings, either dead or living, were discovered, although the group was diligently searched throughout. It is supposed that the greater number of the castaways had been previously rescued by foreign vessels which had touched at the Auckland Isles at different periods, as explained in the introduction and appendix to Captain Musgrave's work by Mr. Shillinglaw, the editor.

The present narrative is a most striking record of patient endurance and heroic fortitude under severe trials and sufferings, of dogged perseverance and resolution; and we have no doubt that the work will be read with the deepest interest, and with combined feelings of pity and admiration, by many persons both in England and the colonies.

FOREIGN NOTES.

"The Death of Lucretius" is said to be the title of Mr. Tennyson's new poem.

The Rev. Dr. Thompson, Regius Professor of Greek in the University of Cambridge, succeeds the late Dr. Whewell as Master of Trinity.

The Tycoon has sent seven young Japanese to Russia, to learn the language, and to study naval and military science.

A Swedish nobleman has been making a sensation in the Champs Elysées, by driving a team of Norwegian dogs attached to a sort of droiska.

From Paris we hear that M. Gustave Doré is preparing to illustrate La Fontaine's "Fables," for which purpose he spends most of his time in the Jardin des Plantes studying animals, not forgetting fourteen rats, more or less, which he keeps in an immense cage in his studio, in order to observe their habits.

The *Kladderadatsch*, the *Punch* of Berlin, has a clever and somewhat ominous cartoon. Austria and Prussia, as two gladiators, are approaching a throne upon which the Emperor of the French is seated, clothed in the toga, with the laurel-wreath of victory encircling his brow. The gladiators are holding up their swords, and uttering the formula, "*Morituri te salutant*," whilst the Emperor Napoleon's countenance expresses the delight he feels at the prospect of this *combat à l'outrance*.

At a recent meeting of the *Société des Gens de Lettres*, in Paris, Alexander Dumas advocated a plan for the construction of a gigantic theatre, where plays of every nation would be performed. He merely asks for two millions to carry out his scheme, and promises to subscribers of 2*f*., 5*f*., or 1000*f*., 100 per cent profit. M. Dumas purposes travelling all over the known world to collect subscriptions, and feels confident he will yet construct his cosmopolitan theatre.

Among the many munificent contributions to literature made by the Bavarian government, is a complete edition of the chronicles of the cities of Germany from the fourteenth to the sixteenth century. Three volumes have been published, and a fresh set is commenced by the Chronicles of Augsburg, which are rich in picturesque anecdotes, and graphic illustrations of the manners of the times.

M. Prévost-Paradol, of whom there is so much talk in Paris just now, is well known for his love of horsemanship, as well as his little regard for the present dynasty. A curious circumstance happened to him a few years since. Being unable to keep a stable of his own, he had hired a horse from a dealer. It was a strong, spirited animal, and off he galloped on it to the Bois. There he fell in with the Prince Imperial, attended by a small escort of dragoons. Just then the bugler blew a call, and at the sound M. Prévost-Paradol's horse pricked up its ears and suddenly joined the troop. In spite of all his efforts to prevent it, the young journalist was carried along with the escort, and had to ride into

the court-yard of the Tuileries in attendance on the Prince. It turned out that he was mounted on an old cavalry horse.

A most curious gathering of autograph letters, addressed to the late Lady Blessington by artists, literary men, noblemen, and others, has just been sold by auction in London. The names of Moore, Shelley, Landseer, Dickens, Macready, Bulwer Lytton, Disraeli, and many other celebrities occurred. There were also some very extraordinary relics in the shape of locks of hair of distinguished persons; amongst others, Lucretia Borgia (given by her to Peter Bembo, and presented to Lady Blessington by the Abbé Bentivoglio, keeper of the Ambrosian Library at Milan, 24th May, 1826); the Duke of Wellington, Lord Nelson, Countess Guiccioli, and Mrs. Hemans.

An important addition to the means of diminishing pain has been made by an English physician, who has introduced a new method of producing local insensibility to the knife. Chloroform robs the most terrible surgical procedures of the worst horrors which formerly surrounded them, and has even rendered possible some operations which could hardly have been attempted without it; but it has its own peril, — the peril of death. Surgeons justly encourage their patients, by reciting to them the statistics of fatal accidents under chloroform, which, incomplete though they be, demonstrate the extreme rarity of such misfortunes. It has, however, been observed by all authors who have collected these cases, that a remarkably large proportion of the recorded deaths have occurred where only minor operations have been contemplated. Hence a rapid and efficient means of producing local anæsthesia, and one free from any of the constitutional risks attending the administration of chloroform, is a boon of great price. Dr. B. W. Richardson effects this result by directing on the skin a finely divided spray of pure ether, using an ingenious modification of the spray tubes, lately much in vogue as toys, for diffusing perfumes. A rapid blanching of the skin, and insensibility to pain, follow in from about thirty seconds to two minutes. Upwards of a hundred operations have within the last few weeks been painlessly conducted under this method. It is only likely to be generally useful for superficial operations; but these are so often undergone at the cost of great terror and anguish, through dread of the risks of chloroform, that the value of this invention must be very great.

An extremely interesting discovery has just been made at Fiesole, on the site of a vineyard adjoining the Villa Mozzi, or Villa Spence as it should now be called in accordance with Florentine custom, which confers the name of the possessor of the villa on it. During the process of digging trenches, the laborers came on the foundations of what there is every reason to believe must have been an Etruscan temple, and also of a conduit, and what appears to have been a circular well. The base of a large column has been laid bare, and portions of a wall, resembling in its nature the fragments of the ancient city wall, visible on the north side of the hill.

These discoveries are of such importance that Mr. Spence purposes continuing the excavations in hopes of finding further relics of the past. Bearing in mind how important a place Fiesole was, it is remarkable that the hill has never been thoroughly examined. Some remains of an amphitheatre constitute all the remaining vestiges of the ancient city, whether of the Roman or of the Etruscan age, excepting some fragments employed in the construction of other buildings, and a few relics. The amphitheatre was excavated in 1809, at the expense of a Prussian nobleman; but, strange to say, though very interesting, the greater portion was again covered with earth. The unexplored part of Fiesole is, indeed, so full of promise that it is greatly to be hoped that it will be efficiently explored.

A COMMON CHILD.

A LONDON LYRIC.

Reflective reader, you may go
From Chelsea unto outer Bow,
And back again to Chelsea,
Nor grudge the journey, if you meet —
In lane or alley, square or street —
The child whom all the children greet
As Elsie, — little Elsie.

A pretty name, — a pretty face, —
And pretty ways that give a grace
To all she does or utters,
Were all that Fortune could bestow
About a dozen years ago,
When little Elsie's lot below
Got cast among the gutters.

For Fate, you see, has willed it so
That even folks in Rotten-Row
Are not without their trials;
While only they who know the ways
Of wicked London's waifs and strays
Can fancy how the seven days
Pass over Seven Dials.

Suppose an able artisan
(The common type of working-man
So written-at and lectured),
From all the fevers that infest
His temporary fever-nest,
Selects a deadly one; the rest
Is easily conjectured.

'T was hard upon his death, I think,
That Elsie's mother took to drink
(And harder still on baby).
The reason of it? I confess
I 'd rather leave it *you* to guess.
Perhaps 't was utter loneliness;
Or love of gin, it may be.

So there was Elsie all astray,
And growing bigger day by day,
But hardly growing better.
No other girl, in all the set
That looks on Elsie as its pet,
But knows at least the alphabet;
And Elsie — not a letter.

So, reader, I had best be dumb
Upon the future that may come
To this forlorn she-urchin.
Her days are pretty bright *pro tem.*
So let her make the most of them,
Among the labyrinths that hem
Saint Giles's ugly church in.